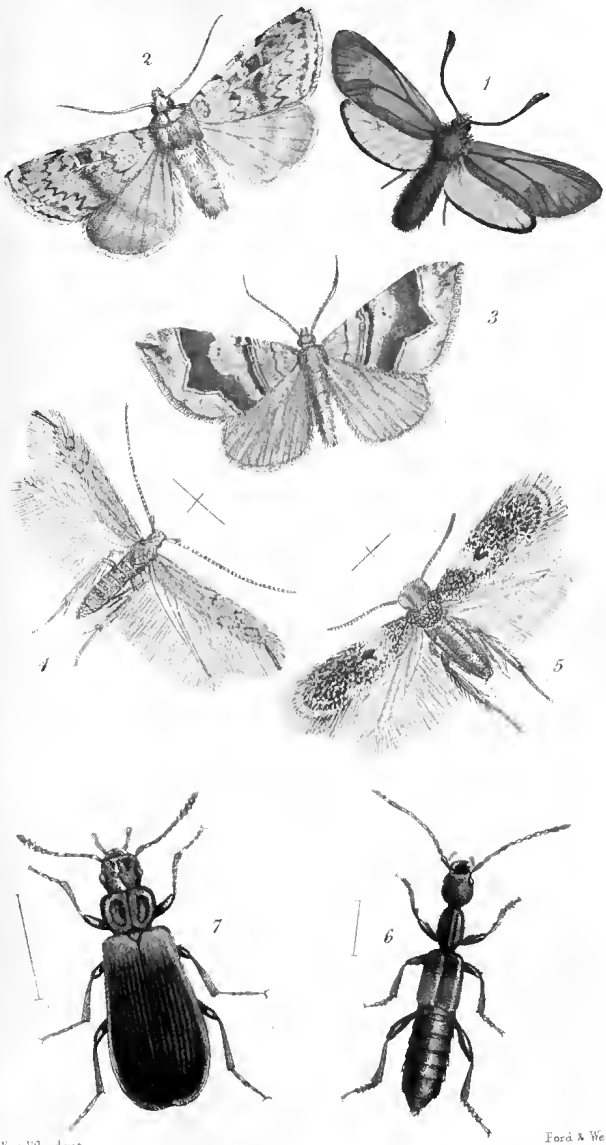

Wing & W. Wing, lith. ad nat.

Ford & West, imp.

1. Anthrocera Minos . 2 Spælotis Vallesiaca. 3. Eubolia mæniata
4. Gomodama auroguttella. 5 Nepticula Weaveri

THE

ENTOMOLOGIST'S ANNUAL

FOR

MDCCCLV.

COMPRISING

NOTICES OF THE NEW BRITISH INSECTS

DETECTED IN 1854.

LEPIDOPTERA. By the Editor.
HYMENOPTERA. By Frederick Smith.
COLEOPTERA. By E. W. Janson.

EDITED BY

H. T. STAINTON,

AUTHOR OF "THE ENTOMOLOGIST'S COMPANION."

Second Edition,

WITH CONSIDERABLE ADDITIONS,

INCLUDING

Instructions for Collecting, Preserving and Arranging Insects, and an Address to the Young Entomologists at Eton, Harrow, Winchester, Rugby, and at all other Schools.

LONDON:
JOHN VAN VOORST, PATERNOSTER ROW.

MDCCCLV.

LONDON:
PRINTED BY C. ROWORTH AND SONS,
BELL YARD, TEMPLE BAR.

PREFACE TO THE SECOND EDITION.

THE enthusiastic reception which "The Entomologist's Annual" has met with, from all classes of Entomologists, not only renders its continuance in future years a matter of certainty, but has rendered it necessary to bring out a Second Edition of that "for 1855."

Of course, if the demand that has arisen for the book could have been foreseen, a larger "first edition" would have been printed, but, starting with so few *data* to go upon, I was as much mistaken, in the probable success of the undertaking, as were the originators of railroads respecting the probable speed to be obtained by locomotive engines.

The object of this Annual is to record systematically the discoveries of each year. Every year new species are being added to our Fauna, and that these should be *systematically* chronicled is, in a science so vast as Entomology, of very great importance. That this may be efficiently done, it is essential that the writer, on each group or order of insects, be selected from those best acquainted with the subject.

The present volume contains only three Orders: the LEPIDOPTERA, which, with the kind assistance of Mr. Doubleday and Mr. Douglas, I have worked up myself; the HYMENOPTERA, for which no more able and thorough writer can be found in England (*if* in Europe) than Mr. Frederick Smith, one of the Assistants in the Zoological

Department of the British Museum; and the COLEOPTERA, which have been most carefully elaborated by Mr. Janson, to a degree which has elicited the warm admiration of such celebrated Coleopterists as Mr. Waterhouse and Mr. Wollaston. In future years I hope to be able, as a greater amount of talent becomes attracted to the ample field of Entomology, to introduce gradually other orders of insects, till ultimately the entire cycle of Entomology may be comprised within this portable little book.

Whenever the amount of scientific matter for the Annual is sufficiently limited, to allow of chapters of an amusing nature, relating to Entomology, being introduced, I shall certainly not fail to avail myself of the opportunity of adding some "dulce" to the "utile," satisfied that thereby the *usefulness* of the work will in reality be increased. Many who would hesitate to get the Annual, if all dry and scientific, may be tempted by such amusing chapters, and so be gradually induced to become readers of the more scientific parts, whereas it might otherwise only be sought after by those well advanced in Entomology, and therefore less in need of it.

In preparing the Second Edition, I found myself able to expand the volume a little, and have therefore introduced "An Address to young Entomologists at Eton, Harrow, Winchester, Rugby, and at all other Schools," and "Instructions in collecting and preserving *Lepidoptera* and *Coleoptera*," which will, I hope, be found useful to those for whose benefit they are intended. I hope that this increase in the size of this edition will not render the purchasers of the first edition dissatisfied with their bargain; as these chapters are quite elementary, they are comparatively useless

to the "old hands," yet, if any one feels himself aggrieved in this matter, if he wishes it, I shall be happy to give him a copy of the second edition in exchange for his copy of the first.

Several letters which I have received from new Correspondents concerning "The Annual," contain such useful suggestions, that a few extracts will not be out of place here.

"Your estimate of the number of Entomological workers is rather amusing, and I would suggest to you to try and gather materials for a paper on *Entomological Statistics*, as it would really be very interesting; and if you will only get some correspondent in every town to send you the names or numbers of all he knows devoted to studying or collecting in any division of Entomology, instead of your estimate of *four hundred* only, I am disposed to think it would be nearer *a thousand*. But then, I admit, many of these would be found in the humbler classes of society, and *not book-buyers*. As far as my experience goes, Entomologists, especially those 'who amuse themselves with catching insects,' are *far shyer* in declaring themselves than Botanists and other Naturalists; and, if I must speak the truth, are too often *more selfish*, delighting to find anything very rare, but very chary indeed of divulging the secret to any one else. The majority too of collecting Entomologists are *not of a literary turn*, and this tends to prevent *their being known themselves, or knowing what is going on in the literary world*. Thus, I have frequently met with men who had stored up good boxes of insects, of their own collecting, but knew nothing of their classification—merely the common names, 'Mother Shipton,' 'Wood White,' 'Skipper,' &c. &c., but *had not a book on the subject*.

"Indeed, as there are anglers who look only to the *pot*, so there are a numerous set of *collecting Entomologists*, who look only to *the pocket*, and have hardly a spark of true love of science in their composition. This is a sad evil to the systematic and writing Entomologist, who naturally wants readers sufficient to remunerate his publishing outlay but cannot obtain them.

"Your Annual is a move in the *right direction*, but more than this is required. Books on Entomology are far too high in price for the many—I was almost going to say for *any*; and if the thousand collectors, that I estimate there really exist in England, are to be reached, it must be through such half-crown publications as yours, and not in expensive volumes, which few indeed can obtain. I have always been for *extending* knowledge as much as possible, and *increasing the numbers of students*; but this can only be done by descending at first to the comprehension of *the many, who only desire amusement*, and so inducing them to ascend the steep ascent that conducts to the temple of science. Moderate priced publications may do this, as well as monographs of different families, brought out in a cheap way. How few are likely to buy Westwood's book on the Lepidoptera! but if there were *good*, yet *moderate priced* volumes, that *collectors* might be induced to buy, on British Butterflies—British Moths—British Bees—British Coleoptera, or Coleopterous Families, &c. &c., the study of scientific Entomology might be *much extended*. However, it may be well first to ascertain the present number of *practical* Entomologists, and then the problem to solve is to convert them into *readers*."

Another correspondent writes, "would it not be a good plan to have a catalogue of collectors as well as insects.

Every known collector in a district probably knows of several collectors, among the lower classes; and though many through jealousy would be unwilling to give up their names, I hope there are enough liberally minded collectors to counterbalance any such feeling."

Another writes, "most of the books on Entomology are so very expensive as to be out of the reach of common folks —if there could be a cheap book got up on Entomology, written in a plain, simple style, with the latest given name in English and the Latin one in italics, my opinion is, that there would be a great many more books sold, and we should hear of many more Entomologists, and likewise a great many more rare insects being taken. Entomology appears to me to want to undergo a radical reform; there seems great confusion heaped together in technicalities, synonyms, and bad Latin names, not appropriate to their use; in fact there wants a 'Modern Model English Book on Butterflies and Moths, for the Million.'"

Now, with reference to the suggestion to publish a list of Entomologists, I would gladly do this in next year's Annual, if I find that the idea is generally palatable—and it would be well to indicate not only the names and addresses of the parties, but also the order to which they more particularly devote their attention.

As to bringing out cheap systematic works on Entomology I shall be very glad to receive further suggestions, and may be able to give some announcement on the subject in "the Annual for 1856;" with reference to the necessity of writing intelligibly to *the many*, I cannot do better than refer to the following extract from the preface to Newman's "History of Insects."

"Teachers in science are nearly equally divided into two classes;—those who know too much and those who know too little. Those of the first class, overloaded with science, cannot admit the possibility of meeting with readers who have none; and therefore their essays and introductions are so worded that it requires a tolerable proficiency to understand them. The teachers of the second class fall into the opposite error; they curtail, garble and popularize the writings of others without understanding them, forgetful that it requires a consummate knowledge of any science to abridge a work which treats of it ably and at large. The author submits, that both classes are in error; he submits also that introductory works should be written *for* those who know nothing of the subject on which they read, and *by* those who possess, in themselves, some practical knowledge of the subject on which they write." This entirely agrees with my own feelings, that a person must have more skill in order to teach the *unlearned* than would be necessary to teach those who have already made some progress.

It can hardly have failed to have struck the most unobservant that the votaries of Entomology have of late years increased in a rapid ratio; this has become statistically apparent in the recent development of the Entomological Society. It is but a few years since I attended a meeting for the purpose of devising some scheme of extricating the Society from a position of considerable difficulty, it being then 130*l.* in debt, and with an expenditure in excess of its income! Many might have been tempted to despair of recovering the Society from so deplorable an abyss; but John Bull, however fond he may be of grumbling, *never despairs*, and besides it is proverbial that "when things get to the

worst, they begin to mend:" and certainly it was so here—the very difficulty of our position compelled a strict attention to economy and also induced the most energetic efforts to increase the income of the Society; and it happened fortunately that at this very time, for I am speaking of a period no more remote than 1849, the Society had the good fortune to obtain the services of an efficient Secretary of good *business habits* in the person of Mr. Douglas, and however little that may be the general impression among those inexperienced in such matters, it is of vastly greater importance that our Secretary be a good man of business than that he be a scientific Entomologist,—not but what it is advantageous to combine, as in Mr. Douglas's case, the two qualities, but of the two the former is by far the more important qualification, as I had abundant opportunity of ascertaining during my own service as Secretary.

The Society, which in 1849 only numbered 71 Members, has now (including the new class of subscribers) more than double that number; and to all appearance the present number will be again doubled before another six years have elapsed. Commensurate with the increase in the number of members of the Society and *consequently of its funds* has been an increase in the bulk and utility of the Transactions of the Society, which now appear regularly at quarterly intervals.

That this rapid increase in the number of the Members of a London Scientific Society is a strong indication that the votaries of the science which it fosters are becoming generally more numerous, no one can deny, and that a taste for Entomology will yet become still more extensively diffused is a conclusion which few will probably be inclined to dispute; and this Annual hopes that it will be found no mean con-

tributor to a "consummation" so "devoutly to be wished." It aspires to serve as the small end of the wedge, which shall convey to many, who would otherwise have remained ignorant on such matters, a knowledge of what is doing by the Entomologists of this country, and by conveying that knowledge to excite an increased amount of interest in the subject. If space permit, a glance at what is doing on the Continent shall also be introduced another year.

The severe winter of 1854-5 has now passed away, spring has come, and no doubt all Entomologists are already actively engaged. That each may have a successful season is the sincere wish of

H. T. STAINTON.

Mountsfield, Lewisham,
March 22nd, 1855.

CONTENTS.

"Another reason why so many kinds of creatures were made, might be to exercise the contemplative faculty of man; which is in nothing so much pleased, as in variety of objects. We soon grow weary of one study; and if all the objects of the world could be comprehended by us, we should, with Alexander, think the world too little for us, and grow weary of running in a round of seeing the same things. New objects afford us great delight, especially if found out by our own industry."

JOHN RAY, *The Wisdom of* GOD in *Creation*

THE PURSUIT OF ENTOMOLOGY.

(By the Editor.)

The difficulties of a pursuit not unfrequently deter many from commencing it. After catching a number of Butterflies, and of the larger Moths, in those halcyon school-boy days, the incipient Entomologist pauses, perhaps to consider whether he shall seriously occupy himself with the subject; if he is deliberately to form a collection, that collection must be arranged. Now comes the first difficulty: it is all very easy work, when a lot of gay-coloured insects are caught, killed and set out and placed "any how" in a large box, and the tyro may even proceed further and arrange together those specimens that seem to be alike; but this done, he feels a desire, a pressing urgent desire, for some book on Entomology. When that desire can no longer be restrained, our young Entomologist meets with one of the numerous books written *to sell, not to instruct*, and fondly imagines that he has obtained an infallible guide; he little thinks that he also *has been sold*. He now proceeds, by the help of his new lights, to unravel the mysteries of his tangled collection, and soon discovers the names of some of the most conspicuous; but beyond that he finds a vast mass which, for the present, he must be content to lump together, as unascertained species. One difficulty that soon besets the student is, that the specimen he may have before him may have been a recent addition to our Fauna, and may not have been known to the writer of the

work he has obtained: this uncertainty increases his difficulties considerably. Were he sure that the species was figured or described in the work he is using, he could have continued his investigations, determined to ascertain its name; but uncertain whether he be not, in fact, seeking that which is not there, his search is necessarily carried on with less vigour, and with less prospects of success. Every year new species are being met with in this country, some totally new to science; some which, though common enough on the Continent, had not previously been met with here. With the increasing vigour with which Entomology is pursued—and probably it has twice as many eager votaries as it had twenty years ago—novelties, instead of being fewer in number, as might be expected were the mine nearly exhausted, are actually on the increase, and will probably so continue for several years to come. Besides the species actually new to us, many once of great rarity turn up in some locality in great abundance, or as *Sphinx Convolvuli* did, in 1846, swarm throughout the country. It thus happens that our tyro meets with some insect in great plenty, which his "Index Entomologicus" mentions as "very rare;" and he hastily concludes that he has had some wonderful luck, and is inclined to boast of his captures, till some kind friend informs him that "the insect is now so common, that nobody thinks its capture worth mentioning:" whereat, though he may thank his friend for his kindness, he nevertheless feels a little annoyed—people do not like to discover that their swans are only geese.

The idea of the present work is to supply these two main desiderata: to give systematically notices of all the new species found in this country in the past year, and at the same time to intimate which once rare species had been taken in any plenty. In the present volume, so much space being occupied by notices of the novelties since the last

standard work on the subject, there was not room left for notices of the rare species which have become common, without swelling the book to a size which, by enhancing its cost, would have diminished its usefulness by limiting its circulation.

Entomologists are not drawn from the wealthy, but rather from the working classes; an extra sixpence or two in the price of this book might put it completely beyond the reach of a large circle of Entomologists. An Entomologist is none the less one because he wears fustain, and "labours, working with his hands;" and in very many of this class the innate love of these beautiful objects of creation, the Butterflies and Moths, supplies them with one of their purest pleasures. Should not such tastes and such pursuits be encouraged? An observation, if new, is as important by whomsoever made; and a Spitalfields weaver may supply some important gap in our knowledge, which Oxford and Cambridge put together would fail to elucidate.

To those who have not yet left school, I would suggest that the Midsummer holidays of the school-boy afford opportunities of making Entomological captures, which rarely re-occur in after life. At no subsequent period are they likely to have so much time thrown completely on their hands; hence it is that many of our rarest species have been taken by Entomologists while yet in their teens, and much more would, no doubt, be accomplished by them, if older and more experienced Entomologists would assist the young inquirers with information. Those who *have* acquired information should endeavour to render it as useful as they can, by communicating it to as wide a circle as possible; and, acting on this principle, I am always happy to answer any inquiries addressed to me by young Entomologists.

AN ADDRESS

TO

YOUNG ENTOMOLOGISTS

AT

ETON, HARROW, WINCHESTER, RUGBY,

AND AT ALL OTHER SCHOOLS.

(By the Editor.)

Almost every celebrated follower of Entomology has dated his predilection for that pursuit from his school-boy days; consequently among those who now at school are fond of Entomology, are concealed the Cuviers, the Kirbys, the Erichsons, from whose labours we shall all derive instruction ere twenty years have passed away, and many who still in round jackets and turn-down collars read these lines will, before they are five years older, have materially assisted the writer by their own observations; *such is my firm conviction.* Have not I then a strong interest in increasing, to the utmost in my power, the number of my readers, in urging each individual to increased assiduity and encouraging him to seek information?

The feeling of admiration for butterflies, and a desire to catch them, appears instinctive in almost every child; those who shrink from a beetle and fear a wasp or a dragon-fly, feel no abhorrence at the sight of the butterfly; be it a garden white, a peacock or a nettle tortoise-shell, it is alike admired and pursued; but many may be disposed to imagine that

because all children run after butterflies, all who run after butterflies are children. As a friend of mine, a clergyman, when well advanced in life, while pursuing eagerly some insect, overheard the remark of some uninitiated in his occupation, "Look at that big babby!" and had his object been merely to catch an insect and look at it for a moment as children do, and then let it go again, he might indeed have been styled a "babby," but then he would not have been an Entomologist.

Kirby and Spence in their invaluable "Introduction to Entomology," a work whose excellence is best understood by the fact of it having gone through six editions in this country, and been translated into several foreign languages, endeavoured to show that Entomologists are not to be despised as triflers, and no doubt at the present day many are disposed to accord them a higher rank, but still see two men in one field, the one standing patiently by the side of a stream trying with a rod in his hand to obtain a "glorious nibble," the other with an Entomological net in his hand in full career after a butterfly (perhaps a Bath white), the passers-by will consider that the angler's occupation has in it nothing contemptible, and they will not gape and stare at him every time he moves, while he who is in pursuit of his *Daplidice* will be regarded with very different feelings, and not a few jokes probably craeked at his expense.

Many of you whom I more especially address are, perhaps, considered by your friends and relatives as following a foolish pursuit, and you are told you are wasting your time and neglecting your studies; the latter I hope is not truly the case, for I advocate that no duty should be neglected for the sake of pleasure, and you will find that you will enjoy your recreation none the less for working hard whilst at work.

All Entomologists begin (I believe without exception) with being collectors of insects, and, therefore, he who is

simply a collector of insects is not on that account to be despised. We do not see the apple trees produce fruit at once, but first comes the bud, then the blossom, and afterwards the fruit is formed; so the collector of insects, his first desire is simply that of getting—

"Cecropias innatus apes amor urget habendi."

But even in pursuit of that object he cannot but notice that some modes of getting succeed better than others, that he finds certain insects in certain places, and so by degrees a habit of observation is formed; and when desirous to add to his own observations those of others, he begins to consult the writings of other Entomologists, he soon discovers that the observations he had made and which struck him as so profoundly novel, had already been recorded more than a hundred years ago; and here immediately comes an inducement for an Entomologist to pursue zealously his school studies. All Entomological books are not written in English. To read the memoirs of Réaumur and De Geer it is necessary to know French, and a facility in reading Latin and German will also be found no mean advantage. The Entomologist, therefore, immediately finds a personal interest in prosecuting his studies of these languages. Instead of saying, as many others might be tempted to say, "Of what use will Latin be to me?" he exclaims, "I shall then be able to read Haworth's Lepidoptera Britannica;" instead of despising French as a language "good enough for girls," he is anxious to get on with it that he may have no difficulty in reading Réaumur and De Geer. Now, though it be quite true that these studies ought to be pursued in good earnest from a sense of duty, yet when we can do so, it is surely desirable to give the scholar a personal interest in the steady prosecution of his studies.

The philological skill which is used in deciphering some

obscure passage in Xenophon or Thucydides, may later in life be of use in enabling an Entomologist to unravel some obscure description; indeed the classical student soon gets to learn that to ascertain an author's meaning, the only way is to familiarise yourself perfectly with all the author's modes of expression. Individuals rarely use the same combination of words to express exactly the same ideas, and an author's meaning is best elicited by a reference, not to a dictionary, but to himself.

An Entomologist soon finds that the field before him is *so vast*, that even if, as is now generally the case, he confine himself to one order of insects, for him to catch a sufficient quantity of each species to supply even his limited circle of young entomological acquaintance is no pursuit for an idler; indeed he cannot long have pursued this branch of Natural History without noticing that if, as the late Dr. Arnold remarked, an early separation is observed at school between the idlers and the workers of the community, that he has already taken his election among the latter class.

Want of useful employment for their time is the great bane of the mass of mankind—"for Satan finds some mischief still for idle hands to do"—any one who can early initiate the young to some attractive amusement, which shall at the same time afford them useful employment, becomes a benefactor to his race. Now, of all branches of study, Entomology is perhaps the most attractive to the young: one great advantage is, that it is a pursuit which combines the healthful exercise of the sportsman with no small amount of headwork at home; and with this advantage over any pursuits in which the out-door exercise and in-door study are totally disconnected, because here each reacts upon the other, the Entomologist carefully examines a specimen under the microscope to ascertain to what group it should belong, and during his next walk he takes pains to observe the habits

of the species when at large, in order to be able by analogy to trace with what other species it has affinity. He who aims to be a good Entomologist will also not omit to pay his respects to "Flora," for most insects being vegetable feeders, an acquaintance with Botany is very essential. Now Botanists are a much more numerous class than Entomologists, and the pursuit is one looked generally on with more respect; but inasmuch as insects are endued with volition and powers of locomotion, they claim a higher place than plants in the kingdom of Nature, and those who make their study the recreation of their lives will continuously reap benefits from it, which at first they little anticipated.

And in the first place they will soon discover practically the littleness of their knowledge,—and what more conducive to check presumption or conceit? he who penetrates but a little depth below the surface of any one branch of science, soon finds before him numerous facts and ideas of which, before he penetrated to this extent, he had no conception; reasoning therefore by analogy he concludes that all other branches of science are equally pregnant with interesting results to reward the active investigator. Perhaps he had nearly begun to conclude that he knew "pretty nearly every thing;" now he finds that even in this one branch of science what he does *not* know is infinitely more than what he *does* know, so that he will feel inclined to exclaim with a celebrated living Entomologist*—

"If Entomology became any one's daily and favourite occupation, there would be matter enough for observation, investigation, correction and discoveries for centuries of years, without the least sensible exhausting of the object,"—and if Nature herself is thus infinite, what must be her Creator!

* Herr C. A. Dohrn, President of the Entomological Society of Stettin.

And in the second place, the Entomologist will deduce but little moral from his observations if he do not gather from them strong reasons for a continuous cheerfulness: let him but walk on some sunny summer's morning by the side of some verdant hedge, he will observe that insect life is displayed before him, not singly or in dozens, but in hundreds and thousands, and each of these insects has a part to play in the great economy of Nature, each is enjoying its short life, and is fulfilling the end of its creation. It is impossible for any one seriously to reflect on the continuous happiness enjoyed by these atoms of the animal kingdom, without inquiring whether man may not even here participate in it. The cause of half, nay, of nine-tenths of our troubles, is that we are disposed to grumble and be peevish if everything does not fall out exactly as we anticipate. The Entomologist will act wisely if, taking lessons from insects, he endeavours to increase his own happiness by being *contented* in whatever position and in whatever circumstances he may be placed; if we hold that "whatever *is*, is right," then the sooner we reason ourselves into acquiescence in that which *is*, the sooner do we derive the benefit of a uniform serene cheerfulness which prevents any apparent annoyance being a real trouble to us; and the feeling described by St. Paul, "I have learned in whatsoever state I am therewith to be content," does not in the slightest degree interfere with our energetically endeavouring to effect some object. It does not at all prevent our acting with a view to the future; we only admit cheerfully that which no exertions of ours can alter, that which *has come* to pass. An Entomologist may strive earnestly to discover some particular species, may tax his ingenuity and spend a vast amount of time, but if he still does not succeed, though he may not relax his efforts in the least, he will, if he has profited by his studies, abstain from all feelings of discontent; he will not be disposed to grumble

at his hard fate, and deem himself an ill-used individual, but he will be inclined to laugh at his repeated failures, and amuse himself with making good tales about them.

Now if the Entomologist learns to be cheerful, and learns not to be conceited, no one can tell him that his pursuit is a useless one,—but do I recommend every one to become an Entomologist? No, there are other branches of science as worthy of study as Entomology; it would not do to neglect them, but I may wish that there were more Entomologists; and there is no doubt that it would be a great benefit to themselves, and to all their acquaintance, if all those who are now destitute of any scientific occupation were to turn their attention to Entomology; nor let it be for a moment imagined that I recommend any one to devote his *whole time* to Entomology. If it be made the *business* of life, some other occupation must be sought for *recreation;* you cannot engage the whole day in one uniform occupation without feelings of weariness and irksome monotony being induced; follow your business whatever it may be with energy during the full time allotted to it, but after business hours, instead of dozing before the fire-place, or doing "nothing at all particular," pursue some scientific study in a methodical and business-like manner, in short—"Take a pleasure in your business, and make a business of your pleasure."

But I fear I am preaching too long a sermon to secure the unflagging interest of my younger readers, so I will endeavour to direct their attention to some points more immediately practical. I will presume you have each of you been collecting for a year or two, and have obtained a tolerable collection, but no doubt you are puzzled to get some of your specimens named, and as there is no royal road to Entomology, any more than to any other branch of learning, to name a collection of insects is not an easy matter. Many is the inquiry that I have had for some work on Entomo-

logy, "with good coloured figures of all the species, and with good descriptions." Such a book would be cheap at £100; *there is no such book*, nor do I anticipate there ever will be one possessing such qualifications. On several orders and groups of insects we possess no systematic British work, but for *Lepidoptera* we have "Stephens's Illustrations of British Entomology," and for *Coleoptera*, "Stephens's Manual of British Beetles;" and faulty as both works have long since been ascertained to be, they have not hitherto been superseded by any later works on the same subjects, and however awkward it may be to use a book as an authority which we are well aware is no authority, we must use such tools as we have, and where that cannot be selected which is actually good, we take that which is the best, remembering that "parmi les aveugles un borgne est roi."

But no doubt I shall be asked are there figures in these works. In the "Illustrations" there are a few, in the "Manual" none. Now my readers are probably more anxious for a book full of figures, than for one containing only descriptions. About twenty years ago a work was projected for figuring all the British *Lepidoptera*, and it did figure all the species known at that time. I allude to Wood's Index Entomologicus. This work, from the facility with which it enabled isolated collectors to name their specimens, has probably contributed more to promote the study of the British *Lepidoptera* than any other work; the figures of many of the species are excellent, and, except in some of the obscure groups, and the *Micro-Lepidoptera*, there are few figures which may not be easily recognized. Unfortunately, since its publication the progress of the science has led to the adoption of an improved nomenclature, more in accordance with that on the continent (for twenty years ago an insect not unfrequently bore one name here, another in France, and a third in Germany, so that the Entomology of one country

was an "unknown tongue" to the inhabitant of another), and the result has been, that if the collector finds that his insect is fig. 242 of Wood, and consequently *Hadena ochracea*, he has then to find by what name *Hadena ochracea* of Wood is now known; for which purpose he must refer to the index of Stephens's Museum Catalogue of British Lepidoptera. It was to supply this difficulty, a great and increasing one, that a new edition of Wood's Index Entomologicus has lately been brought out at a considerable reduction of price, and with the nomenclature carefully revised; but the figures are not as well coloured as the original edition, and those who can meet with the original at book stalls will do well to secure the prize.

Humphrey's and Westwood's British Butterflies and British Moths is a work which, from being showy and cheap, is tolerably well dispersed amongst Entomologists, but the figures are far inferior to those in Wood, and it will rarely enable a collector to name any but his most conspicuous species. It is true some species are figured in it, not known as British at the time of the publication of Wood, but these have been included in a supplement to Wood's Index Entomologicus, published last year, and which for the small price of 12*s.* 6*d.* contains 180 figures.

Lately there has appeared a revised and *much improved* edition of Humphrey's and Westwood's British Butterflies, the plates to which are entirely new, and only those species are in it admitted as British which are adopted as such by Stephens in his Museum Catalogue of British Lepidoptera. The title of this last and best work on our butterflies is "The Butterflies of Great Britain, with their Transformations, delineated and described by J. O. Westwood."

But even the fortunate possessor of several works on Entomology will still find himself at a loss to name many of his specimens; yet there are several Entomologists, who,

like myself, would gladly afford any beginner such information as he might feel disposed to seek—but how is the tyro to get acquainted with any of these useful members of the community? Of course I cannot answer so clearly for others as I can for myself, but I know this, that if any young collector (not under fourteen years of age) were to write to me for information, I should be more pleased at receiving his inquiry than he would be at obtaining my answer, and let him not imagine that I am a sedate elderly person with no fellow feeling for a mischievous school boy; I have no sedateness about me, and am as full of fun as any one, and as the late Dr. Arnold used, when at Laleham, to "romp and play in the garden, or plunge with a boy's delight into the Thames, entering into his pupils' amusements with scarcely less glee than themselves," so I am quite ready to participate in the delight of the youngest Entomologist, on adding some species to his collection, or some new fact to his knowledge; but further to facilitate the *first step*, and we all know that "ce n'est que le premier pas qui coute," I here give samples of letters, such as may be useful as models by those seeking for information:—

"Dear Sir,

"Encouraged by your invitation in the Entomologist's Annual, I write to ask if you can tell me at what time of the year I should seek for the larvæ of the Emperor Moth (*Saturnia Carpini*), and which would be the most likely localities in which to find them.

"Believe me, dear Sir,

"Yours very truly,

"Dear Sir,

"I lately found a hairy caterpillar of a bright yellow, with long red tufts of hair and a black chain-like mark

down the back. I have tried it with various kinds of food, and it will not eat; can you tell me what it is, and on what plant I should feed it? Your invitation to those in search of information encourages me to trouble you with this inquiry.

"Believe me, dear Sir,
"Yours very truly,

The reader will observe, that though addressing a perfect stranger, he commences "*Dear* Sir;" this is the *etiquette* amongst Naturalists; an Entomologist, writing to another for the first time, never thinks of beginning "Sir;" that would be considered very stiff and formal.

The inquiries I have given are two, which I should have been very glad to have put when I was young to any more practised hand, as it was long before I obtained any specimens of *Saturnia Carpini*, and the first larva I found of *Acronycta Aceris* I found on some palings, and though I tried it with various kinds of food, I suppose I never offered it either horse-chestnut or sycamore, and it soon died of hunger.

Insects are transmitted from one Entomologist to another by the post; with larvæ the matter is very simple, as all that is necessary is to place them in a small tin box, with some of the proper food, and wrap up the box in paper and direct it; perfect insects, however, require to be handled with more caution—and in the first place they should be carefully pinned into a small, *light, yet strong* corked wooden box, and those which had large bodies should have them carefully pinned down by two or more pins going crossways over the body; the box should then be carefully wrapped up in several thicknesses of cotton-wool, and then enclosed in paper; the object of the cotton-wool is to prevent any jar to the insects when the box is being stamped in the post-

office, as without the precaution the first stamp it received would probably dislodge several bodies, which would then amuse themselves with knocking off the legs and antennæ during the remainder of the journey. Sometimes, with all our care the box arrives at its destination squashed, and then it affords a capital opportunity of testing the serenity of our correspondent's temper, and his equanimity under trying circumstances, and if he writes a very fierce remonstrant letter the answer naturally suggests itself,

"Absurde facis, qui angas te animi."

INSTRUCTIONS

IN

COLLECTING, REARING, KILLING, PINNING, SETTING AND ARRANGING

LEPIDOPTERA.

(By the Editor.)

How to collect Lepidoptera.

These may be collected in the larva, pupa, or imago state: with the latter or perfect state we will commence the consideration of the subject.

To collect butterflies or moths on the wing, the Entomologist must be provided with a ring net, which should be made of white book-muslin, or of green lino or net; he must also be supplied with a number of pill-boxes, and with a pocket corked collecting-box and some pins. The insect when seen is pursued, but with due caution not to cause it to take alarm, and as soon as contained within the net it must be boxed, or if it be of too large a size, or of a restless nature, it must be pinned. Moths may often be found asleep on palings or trunks of trees, and may be easily boxed without using a net; but some species will readily take alarm when the collector approaches, and he has the disappointment of seeing them fly away just as he was about to box them. Many insects may be dislodged from hedges and bushes by thrashing them with a stick, taking the precaution to keep on the sheltered side of the hedge, as if the young collector

beats a hedge on the side on which the wind is blowing, the moths he dislodges will all effect their retreat on the other, and he will not be benefited, except by the exercise of beating; many insects will be found in grass fields, and may be dislodged by the feet of the collector, or may be obtained by sweeping the herbage. In the Midland counties, and North of England and Scotland, many *Noctuæ* will be found resting on the stone walls, and that rare species, *Crymodes Templi*, is not unfrequently found in heaps of loose stones, by carefully turning them over one by one. Besides the above modes of catching butterflies and moths, some moths may be enticed by stratagem, that is, they may be obtained by SUGAR and by LIGHT.

The moths which are obtained by *sugar* are principally *Noctuæ*. The *Bombyces* never come to sugar, and the *Geometridæ* and *Microlepidoptera* only occasionally, but the *Noctuæ* may be obtained in that way in great numbers; hence our collections are now proportionally much richer in this family than in the others. To obtain moths by sugar, the process is this, a mixture is made of coarse brown sugar and beer, with the addition of a little rum, and this is daubed by means of a painter's brush on the sheltered side of the trunks of trees, or, if there are no trees, on posts, stones, &c. The mixture should be laid on about sunset, or a little before or after, and as soon as it gets dusk the places sugared should be revisited, the collector being provided with a lantern, and for several hours the moths will continue to arrive and may be found sitting at the sugar busily engaged on the dainty meal set before them; at break of day they all however disperse, so that it is of no use to put the sugar on the trees over night and go and look for the moths there the following morning.

The moths which are obtained by *light* are of all the families. *Bombyces*, *Geometridæ*, *Pyralides* and *Crambina*,

come very freely, and even the *Sphingidæ* (i. e. the genus *Smerinthus*) sometimes make their appearance. To obtain moths by light it is advisable to have one light outside the room in advance of the window, and one inside the room; the former light bringing the moths within the sphere of attraction of the inner light. Those who try this plan will find that all nights are not equally successful: sometimes the moth will come *in perfect swarms*, and all sorts of rare species come to the collector, instead of his having to go in search of them; at other times, though the weather seems favourable, no moths will come, and the collector becomes disheartened and declares that light is "no go." It is no use to try light on a bright moonlight night, but dark and dull nights, with not much wind, are generally the best, yet I have known moths come freely when a strong wind has been blowing.

There are certain flowers that some moths are particularly fond of, and may be readily caught in the evening dusk buzzing at them; Silene inflata is a general favourite with many species, and the common red valerian, honeysuckle and the lime tree (when in blossom), are also very attractive.

But besides collecting moths in the perfect state, they may also be collected in the chrysalis or pupa state. Old collectors in the time of Haworth used to obtain pupæ by digging for them, but latterly this plan had so rarely succeeded, that it was generally contemned till the Rev. Joseph Greene succeeded in reviving the plan, by the success which attended his energetic assiduity in this mode of collecting. Mr. Greene, who is the only authority to be quoted in respect of digging for pupæ, remarks,* that "meadows and parks with scattered timber trees are generally the best localities; next to meadows and parks come woods, but searching in woods is a tedious and fatiguing affair, and requires some experience: it is it

* Trans. Ent. Soc. vol. 2, N. S., Proceedings, pp. 110, 111.

vain to examine the dense portions, it is equally vain to dig at the roots of trees in such localities, and you will rarely find anything unless upon trees of considerable growth; the thick moss which collects about the trunks and roots is the part to be examined. *Bombyces* are generally found under the moss which covers spreading *roots* and not on the trunks, which seem to be preferred by the *Geometræ*. The best localities in woods are the borders or open places; such places when elevated or facing the north are generally the most productive. Hedge-rows it is perfectly useless to try; *why* it should be so, I cannot tell. The only instrument I use is a common garden trowel; the form is immaterial, perhaps a rounded blade is best, as passing with greater ease between the roots. The trees which I have found the most productive are the following,—elm, oak, ash, poplar, beech, willow and alder. In digging, it must be borne in mind that all pupæ are close to the trunk of the tree, seldom more than two inches distant; frequently the trunk of the tree forms one side of the cocoon, especially the cocoon of such insects as spin; the chrysalis also lies almost invariably close to the surface of the earth. Insert the trowel about three inches from the trunk, to the depth of two inches or so; then push it to the tree and turn up; if the soil be dry and friable, without grass, knock it gently with the trowel, which will be sufficient. If, however, there be grass you must proceed more cautiously; take up the sod on the left hand, knock it very gently with the trowel, and those pupæ which merely enter the ground will drop out; to find those which spin, you must carefully examine the sod, tearing the roots of the grass asunder; these are of course much the most difficult to find, the cocoons being generally of the colour of the earth. It is useless to try sticky or clayey grounds, the caterpillars being unable to penetrate it; in searching under moss the best plan is to loosen the edge, then to tear it gently

off, observing whether any pupæ fall. Look at the trunk of the tree to see if anything adheres to it, and then carefully examine the moss itself; experience alone will enable you to detect a spun cocoon." But the collector must not be discouraged if in digging for pupæ he is not immediately successful, for, says Mr. Greene, "you will perhaps see ten elm trees to your eye exactly alike; at nine you may find nothing; at the tenth possibly twenty or thirty pupæ. I remember on one occasion trying a number of ash trees, without the slightest success, and was about to give up the search as hopeless when I resolved to try one more; at that one I found forty-six pupæ of *Ennomos illunaria*, and three of *Pœcilocampa Populi!*

No pupæ hunter can hope for success unless he have a good stock of patience and perseverance: he must not mind cold hands, wet feet, or an aching back; for although these are drawbacks, yet is the pursuit quite exciting when successful, and it will reward the seeker not merely of *Lepidoptera*, but also of all the other orders of insects.

The best months for digging are October, November, and December, for the spring and summer insects; July and August for the autumnal species."

And, thirdly, we may collect *Lepidoptera* in the caterpillar or larva state. Those who wish to collect larvæ would do well to turn out early in the morning, for many larvæ are epicures, and only eat whilst their food is flavoured with the morning dew; many of the *Noctuæ* larvæ feed only by night and should be sought for with a lantern; those which feed in hedges and trees may frequently be obtained by beating, taking the precaution of holding a net or inverted umbrella under the object beaten; many larvæ may be found by looking for their "frass," the indications where they have eaten, or their ejectamenta; in very windy weather many larvæ get dislodged from the trees by

the continual agitation of the branches, and may afterwards be found endeavouring to regain their position by crawling up the trunk; in the spring many larvæ may be found after dusk feeding on the semi-expanded leaves of sallows and birches.

The larva collector should be provided with one or more tin canisters of convenient size, in which to put the larvæ he may meet with, and should with each, place some of the food-plant on which he has found it; he must, however, early learn to avoid the larvæ of *Cosmia trapezina*, and *Crocallis elinguaria*, as these prefer making a dainty meal of other caterpillars to a more orthodox vegetarian diet.

How to rear Lepidoptera from the pupa or larva state.

To rear pupæ collected is comparatively an easy matter. "The collector should take with him a box (filled with moss) in which to convey the pupæ, and when brought home they should be placed in a large box, with the inside surface *rough*, and covered with gauze or wire frame; at the bottom of the box should be some fine earth, on which the pupæ are to be placed and covered with a thick layer of moss, which may or may not be occasionally damped. *Be sure to keep them from the sun*," so writes Mr. Greene.

To rear larvæ requires considerable care and attention: the larva must be kept well supplied with fresh food; if its food is allowed to become withered or mouldy, the larva cannot be expected to retain its health. The plan used by Mr. Doubleday of Epping, our most successful rearer of insects, is, to get a glass cylinder and sink one end of it into a flower pot in which is some white sand, the sand is kept moist and the food is stuck into it, so as to keep it fresh for some time; the larva is then placed on its food, a bit of gauze is tied over the top of the cylinder, and the flower-pot and cylinder being

kept out of doors, the larva is as nearly as possible in a state of nature, and no doubt larvæ are quite of Mr. Squeers' opinion, that "it is a blessed thing to be in a state of nature."

How to kill Lepidoptera.

The modes of killing in use among collectors are very various; some use prussic acid, some use chloroform; bruised laurel leaves is a convenient way of obtaining the effects of the former poison, without placing anything dangerous in the hands of young people. The receipt for preparing them is as under.

Gather one hundred laurel leaves, the juiciest you can find (yet they must on no account be wet when gathered); take two or three at a time, and hammer them till they are well bruised; then with a pair of scissors cut them into small pieces—as small as you like, and place them in an air-tight vessel, so secured by some contrivance that the pieces shall not roll about loose.

For large moths and sphinges it is necessary to use a more violent poison, and a quill dipped in saturated solution of oxalic acid should be inserted beneath the thorax of the insect, by which means the largest species may be killed almost instantly. Those who want an off-hand way of killing insects when neither acids, laurel leaves or chloroform are at hand, will find that by burning one or two brimstone matches under an inverted tumbler, beneath which the insects to be killed have been placed, and leaving the inverted tumbler full of the sulphureous fumes for a few minutes the insects will be completely killed, but green moths will be liable to lose their colour.

How to pin Lepidoptera.

In the first place the collector must supply himself with solid-headed pins, which he may obtain of W. Gale, Crown Court, Cheapside, London; they are sold in half ounce boxes, and Entomologists in the country can have them forwarded by post.

The proper sizes to order are No. 6 for Sphinges and Bombyces.
" " " No. 8 for Noctuæ.
" " " No. 8 and No. 10 for Geometræ.
" " " Nos. 19 and 20 for Micro-Lepidoptera.

The pin must be inserted in the centre of the thorax, and held as nearly as possible vertical, if anything with the point rather inclining backwards; many collectors hold them with the point inclining forwards, which gives the insect, when set, rather a silly appearance: the pin should be pushed well through the insect, so as to take firm hold of the cork, about one-third of an inch at least, projecting beneath the thorax of the insect.

How to set Lepidoptera.

The variety of apparatus that has been invented for this purpose would be rather puzzling to a beginner. Grooved and rounded corks are used by many for setting the *Noctuæ* and *Geometridæ* upon, and those who have seen such contrivances can imitate them, but to explain them accurately by description would be difficult. For those who have not such contrivances we therefore recommend a sheet of prepared cork, which should be glued on to a flat piece of wood, so as to keep it steady and prevent it from warping; then cut some braces of thick card-board of various lengths, from three-fourths of an inch to two inches, tapering nearly to a point at one end, the other end being about one-fourth of an inch broad; insert on the brace at this broad end a good

strong pin (I obtain of Mr. Gale a No. 12 pin, which answers this purpose), and when about to set out an insect—say a *Vanessa Urticæ* or an *Arctia Caja*—place two of the longest braces about an inch apart, with their points converging, and let the broad end of the brace be kept well up from the board being some height up the pin, the narrow end being in contact or nearly so with the setting board; these are the *under braces*, and the insect is then to be placed midway between them, and its wings expanded *over* these braces and kept in their place by the use of several smaller braces. The insect may thus be made to assume a rounded form, that is to say, the edges of all the wings are deflected so as just to touch the setting board; it gives the insect a graceful pleasing appearance, but surely not a natural one. On the Continent insects are always set on flat setting boards, with a groove to adjust the body, so that by applying flat braces over the wings they are easily kept perfectly flat and horizontal. The same plan is adopted here by many collectors of *Micro-Lepidoptera*, and in many genera is absolutely essential, or the collector must despair of having his specimens named, as the characters frequently lie in the very tip of the cilia. Insects should be left on the setting board from one to four days according to the size of the species and the dryness of the weather.

In summer care must be taken to exclude mites from the setting boards, or they will infallibly destroy all the best species; keeping a good supply of camphor will not always be found sufficient on the setting boards, which are of necessity exposed to the air, but a mixture of equal parts of oil of thyme, oil of anise and spirits of wine, spread over the setting board, and laid on the *grooves* more especially, will be found of greater effect than camphor.

How to arrange Lepidoptera in the Collection.

It is customary to arrange the larger species in single rows, and the smaller ones in double rows, and from four to six specimens of each species forms a good working collection; there are few who can afford cabinet-room for longer series. A list of names printed on one side only (such as Doubleday's List of the larger Lepidoptera and Tortricidæ, and Stainton's List of the Tineidæ), should be obtained, and the names cut out, the generic names being placed above the species and the specific names below them. To name the Lepidoptera there is no better book yet extant than the first edition of Wood's Index Entomologicus, which contains coloured figures of all the British species known at that time: the letter-press sold with the book is useless, but the figures where recognizable are referred to in the British Museum Catalogue of British Lepidoptera, which was commenced by the late Mr. Stephens and concluded by myself.

LEPIDOPTERA.

(By the Editor.)

In this order, which has the greatest number of admirers, several novelties of importance have occurred during the past season, and the list includes several Macro-Lepidoptera, among them one of the *Sphingina*.

The following list of new species, first recorded or observed as British, in 1854, will satisfy those who are forming collections, that they need not be in any excessive fear, lest they should have obtained all the British species, and have "no more worlds to conquer."

Anthrocera Minos.
Petasia nubeculosa.
Spælotis Vallesiaca.
Miana expolita.
Simaëthis Parictariæ.
Eudorea atomalis.
gracilalis.
Crambus Cassentiniellus.
Retinia Resinella.
Gelechia viscariella.
Ypsolophus Juniperellus.
Röslerstammia Pronubella.
Coleophora limosipennella.
Goniodoma auroguttella.
Elachista Poæ.
Gregsoni.
Lithocolletis cavella.
Vacciniella.
Nepticula Weaveri.
Prunetorum.

But before commencing the observations on these novelties, it will not be inexpedient to notice all the new species that have occurred in this country, since the publication of Stephens's Illustrations of British Entomology. This number is

very considerable; and though most have been enumerated in Doubleday's Catalogue of British Lepidoptera, and the Museum Catalogue of Stephens, yet as neither of those works contains any notices of their captures, nor in whose collections they are extant, those who do not mix with the Entomological throng, but derive their information from books, are little aware how completely the entire science has been *bouleversé* in the last twenty years.

I should premise that *Erebia Melampus*, described and figured by Newman, in the Zoologist for 1844, page 729, as a *new British Butterfly*, has long since been consigned to the tomb of oblivion, as being only the Scotch variety of *Cassiope;* and now proceed to the

NEW BRITISH SPECIES SINCE 1835.

Procris Globulariæ, Hübner, which had long been among the *reputed* British species, was first recorded, as actually caught in this country, by Mr. Weir, in the Zoologist for 1845, page 1085. Mr. Weir took the insect in some plenty on the Downs near Lewes, and it has subsequently been taken nearly every year by the collectors of that town and is in all our cabinets. A specimen taken at Cheltenham, by Mr. Douglas, in July, 1853, was exhibited at the ensuing meeting of the Entomological Society.

Phragmatæcia Arundinis, Hübner (*Zeuzera Arundinis*, Doubl.), was first recorded as British by Mr. Doubleday, in the Entomologist, page 156. It is figured and described in Humphrey's and Westwood's British Moths, vol. i. p. 49, pl. viii. fig. 7, 8. In 1848, two other specimens were taken in the same locality, Holme Fen, as recorded by Mr. Doubleday, in the Zoologist for 1848, page 2236. In 1850, Mr. Doubleday writes in the Zoologist, page 2884, "This insect has occurred in great profusion in the neighbourhood of Whittlesea-Mere this season. The larvæ

feed within the stems of the common reed, and the pupa, which is remarkably elongated, is exceedingly active, moving up and down the stems of the reed with great rapidity." Some account of the habits of the insect is given by Mr. Harding, in the Zoologist for 1850, page 2931.

Drepana Sicula, W. V. (*Platypteryx Sicula*, Doubl.). Only a single specimen of this species has been met with in this country; it was taken in Leigh Wood, near Bristol, the end of May, 1837, and is in the collection of the Rev. Henry Burney. According to Treitschke, the larva feeds, in May and June, on oaks and birches.

Cerura bicuspis, Borkhausen; first recorded by Mr. Doubleday, in the Zoologist for 1847, page 1863. "A male specimen of a *Cerura*, new to Britain, was captured near Preston, by Mr. James Cooper; it was found upon an alder, having just emerged from its cocoon; there is little doubt of its being the genuine *bicuspis* of Hübner; the specimens hitherto so-called in this country being merely *furcula*; from this species it is totally distinct. Mr. Cooper most kindly presented this fine species to me." A second specimen is in the collection of Mr. Hodgkinson, who records the capture of the specimen near Preston, on an alder tree (vide Zoologist, 1849, page 2500).

The specimen announced by Mr. Weaver, as *Clostera anachoreta* (see Zoologist, 1852, page 3399), is stated by Mr. Doubleday, in the same periodical (page 3715), to be only *reclusa*.

Notodonta tritophus, W. V.; first recorded as British in the Entomologist, page 385, by Mr. Douglas, who found the larva on an aspen, in Essex, and bred the perfect insect on the 10th of August, 1842. A second specimen, which was taken in Scotland, is in the collection of Mr. Buxton; it was exhibited at the meeting of the Entomological Society in December, 1852. An ichneumoned larva of this species

was observed by the Rev. Jos. Greene, in Gloucestershire, on hazel, as recorded in the Zoologist for 1852, page 3494.

GLUPHISIA CRENATA, Esper; first recorded as British by Mr. Doubleday, in the Entomologist, page 156—"*Chaonia crenata:* the first British specimen of this insect was taken at Ongar Park Wood, in June, 1839, and a second in the same place, in June of the present year. Both specimens were females." The species is described and figured in Humphrey's and Westwood's British Moths, vol. i. p. 73, pl. xiv. fig. 15. A specimen reared by the Rev. Jos. Greene, from a larva found on a poplar, near Halton, Bucks, on the 18th of August, 1853, was exhibited at the meeting of the Entomological Society, in April last.

GASTROPACHA ILICIFOLIA, LIN. This insect had long been a *reputed* British species, and is described and figured in Humphrey's and Westwood's British Moths, vol. i. p. 61, pl. xii. fig. 8; but no British specimen had been seen by any of the Entomologists of the present day, till in 1851, Mr. Atkinson met with a specimen at Cannoch Chase, May 17th, as recorded by him in the Zoologist for 1852, page 3396: "It was clinging to a dead sprig of heather, apparently but lately emerged from the pupa. From its great resemblance to a withered leaf, it would not probably have caught my eye, had I not luckily knelt down within a few inches of it, to pin a small *Tortrix*. This fine addition to our *Bombyces* was announced at the June meeting of the Entomological Society, and exhibited at the subsequent one in July." The insect has also been bred by [Mr. W. Green, of Eccleshall Road, Sheffield,] but it is still in very few collections. According to Treitschke, the larva feeds from June to August, on sallow and bilberry.

STERRHOPTERYX OPACELLA, H.-S.; discovered in the New Forest, by Mr. Weaver, who found the larvæ in the summer of 1848, as recorded by Mr. Newman in the Zoo-

logist for 1850, Appendix c. Newman describes it as *Pysche Fenella*, but the specimens then known were not as fine as some Mr. Weaver subsequently bred, when Mr. Stephens was enabled to recognize it as the *opacella* of Herrich-Schäffer. It is still in few collections.

Psyche marginenigrella, Bruand; in the collection of Mr. Bond. The following notice of it appears in the Proceedings of the Entomological Society for May, 1853. "Mr. Bond exhibited a specimen of a *Psyche* new to this country, pronounced by Mr. Bruand, who was engaged on a Monograph of the *Psychidæ* to be his *P. marginenigrella*. Mr. Bond reared it from a case which he found attached to a tree, either in Lancashire or Yorkshire." M. Bruand returned the specimen as probably new, and suggested the name in case it should prove so; but he wished to see more specimens, and know more of its history, before describing it, hence it is not mentioned in his Monograph of the *Psychidæ*.

Fumea reticella, Newman; first recorded by Mr. Newman in the Zoologist for 1847, p. 1863—"Mr. Ingall has captured a small *Psyche*, with beautifully mottled wings; it is very different from the known British species, but in some degree resembles *Psyche undulella* of the Continent; it is proposed to call the new species *Psyche retiella*." Mr. Stevens met with it near Sheerness in June, 1850, among *Plantago maritima* (see Zoologist, 1850, page 2857). Newman describes it in the Zoologist for 1850, Appendix xciv., under the name of *Psyche reticella*. It is not at present in many collections.

Lithosia pygmæola, Doubleday; first recorded in the Zoologist for 1847, page 1914, where Doubleday describes it, and then adds—"This small species, which appears to be new, has been taken on the coast of Kent among rushes." A more detailed notice of the capture of this species, from the pen of Mr. Harding, appears in the Zoologist for 1849,

page 2547—"they are very local, being only found over a space of about 400 yards in extent, on the coast of Deal."

TRYPHÆNA SUBSEQUA, W. V. Concerning the *true subsequa*, Mr. Doubleday writes in the Zoologist for 1844, page 399—"Mr. Bentley possesses two specimens of the species, one captured by himself in Hampshire, the other from Mr. Stone's Cabinet, probably taken in the same county. The species is very likely to occur in the southern counties, as it is not uncommon in the northern parts of France." Since this was written, it has been repeatedly taken by sugaring in the New Forest, and is now in most collections. The black spot towards the apex of the costa of the anterior wings, as in *pronuba*, at once distinguishes it from *orbona*.

OPIGENA FENNICA, Eversmann. "A single specimen of this *Noctua*, hitherto unknown in Britain, and principally found in Finland, has been taken in Derbyshire;" this notice by Mr. Doubleday appears in the Zoologist for 1850, page 2971. The specimen is in the collection of Mr. Allis. Guenée retains this species in his genus *Agrotis*, but observes that it has "un facies particulier." It is figured by Duponchel and Herrich-Schäffer.

GRAPHIPHORA DITRAPEZIUM, Bork., (*Noctua ditrapezium*, Doubl.); first recorded as British under the name of *tristigma* by Mr. Stevens, Zoologist for 1846, page 1347—"I fortunately possess a specimen of this distinct species, the true *Graphiphora tristigma* of the Continent, which I have had in my cabinet the last two years, and supposed it only an extraordinary variety of *triangulum*, which it much resembles;" and he then proceeds to describe wherein it differs from *triangulum*. At the August meeting of the Entomological Society in 1852, "Mr. S. Stevens exhibited *Graphiphora ditrapezium*, reared from a larva found at Leith Hill, in Surrey." An old specimen has been detected in the collection of the Entomological Society. The larva,

according to Treitschke, feeds on various low plants, especially the dandelion, and is full grown in April.

GRAPHIPHORA SOBRINA, Boisduval; thus recorded in the Proceedings of the Entomological Society for November, 1853—"Mr. Edwin Shepherd exhibited a new British moth, *Noctua sobrina*, H.-Schäffer, taken this season in Perthshire by Mr. Weaver." Several specimens have been taken in Scotland during the past season. It is not a common species on the Continent; Guenée describes the larva, but adds—"I know not on what plant it lives."

[CERASTIA LEUCOGRAPHA, Hübner (*Noctua leucographa*, Doubleday). The capture of this species is recorded by Mr. Robert Cook in the Zoologist for 1845, page 945. Mr. Cook captured his specimen near York; it has also been taken rather freely at Doncaster, and has occurred near Cockermouth; it has occurred likewise in the south of England, having been taken at Leith Hill, near Dorking, and at Great Marlow, Bucks. It appears about the middle of March, frequenting the sallows when in blossom.]

ORTHOSIA OPIMA, Hübner (*Tæniocampa opima*, Doubl.); first recorded as British by Mr. Newman in the Zoologist for 1845, page 844; and at the page 1006 of the same volume Mr. Allis observes—"this insect was first taken at York in 1842, in which year I captured two specimens upon sallow blossoms, and another was taken by Mr. Cook; we also with met it the two following years, but not in any plenty." It has since been taken very freely at Doncaster; and Mr. Evans, of that place, gave a description of the larva in the Zoologist for 1846, page 1227. The insect is now common in all collections.

ORTHOSIA CONGENER, Hübner; thus noticed by Mr. Doubleday in the Zoologist for 1843, page 332—"The insect taken at York by my friend Thomas H. Allis, and supposed to be *Apamea unanimis*, is *Orthosia congener* of

Boisduval, of which *Caradrina iners* of Treitschke is a variety." It has subsequently been repeatedly taken in the north of England and in Scotland in July and August, and is now in most collections.

ORTHOSIA HYPERBOREA, Dalman. The capture of the first British specimen is recorded by Mr. Douglas in the Entomologist, page 105, as *Agrotis* ——. Mr. Douglas took it on Cairn Gowr, in Perthshire, at an elevation of 3,000 feet. It remained unique in this country till the past season, when a second specimen was taken in Scotland by Mr. Foxcroft, and is now in the collection of Mr. Bond. The specimen taken by Mr. Douglas is described and figured in Humphrey's and Westwood's British Moths, vol. 1, p. 118, pl. xxiii. fig. 13, as *Agrotis alpina*.

ORTHOSIA RUTICILLA, Esper. Of the insect which Mr. Stephens supposed to be the *ruticilla* of Esper, two specimens only have been met with in this country; they were exhibited by Mr. Stephens at the February meeting of the Entomological Society in 1850—"Of these specimens one had been sent to Mr. Shepherd by Mr. Edleston; and the other, which was extremely wasted, was taken by Mr. Stainton at Sheffield in June, 1847." It seems now generally admitted, that these cannot be truly the continental *ruticilla*, but their real name has not yet been ascertained.

GLÆA ERYTHROCEPHALA, W. V.; in the collection of Mr. H. Cooke of Hastings, who thus records the capture, Zoologist for 1849, page 2404—"In November, 1847, whilst sugaring in the parish of Hurst (about seven miles from Brighton) I had the good fortune to meet with a fine specimen of this insect in company with *Glæa Vaccinii* and *G. spadicea*. It at once attracted my attention as being something fresh, but I could not discover what it was, nor could any of my neighbours assist me. A short time since I showed it to Mr. Douglas, and also to Mr. S. Stevens; and ultimately

it was discovered to be the true *Glæa erythrocephala*, Hübner, var. *glabra*, Duponchel. It was exhibited at the meeting of the Entomological Society, in February, 1849; and, being an addition to our *Noctuæ*, of course created interest. I have constantly visited the same locality, in the proper season, but have not succeeded in capturing another. This is, I believe, the only authenticated specimen of the species in Britain, and as such is a prize." This insect is not uncommon on the Continent; indeed, Guenée says of it, "nearly as common in some localities as *Vaccinii*." It has quite the appearance of a *Glæa*, but is nearly double the size of *Vaccinii*, so that it may be immediately recognized by the veriest tyro.

Aporophyla australis, Boisd.; mentioned in Curtis's Notice of the Genus Agrotis, British Entomology, folio 165, "*Pascuea*, Nob. Isle of Wight;" described and figured in Humphrey's and Westwood's British Moths, vol. i. p. 123, pl. xxiv. fig. 2. In the Zoologist for 1848, page 2331, Mr. Stevens records the capture of four specimens near Deal "on blades of grass on the sand hills, in the dusk of evening, evidently from their fine condition only just emerged from the chrysalis;" it has subsequently been taken in some plenty in various parts of the southern coast, and is now in most collections.

Lithomia Solidaginis, Hübner; first recorded as British by Curtis, in his British Entomology, folio 683, where it is also figured and described. It occurs in great profusion in the north of England and has also been met with in Scotland. It is to be found now in the duplicate boxes of every collector.

Hama Dumerilii, Duponchel; only a single British specimen is known; it is in the collection of the late Mr. George Robertson, of Limehouse. The species is not uncommon in the neighbourhood of Paris, where it occurs on

the trunks of elms in September. It has considerable resemblance to *Hama testacea*.

HAMA FURVA, W. V.; this insect had been taken by Mr. Logan prior to 1846, and it has since occurred near Arthur's Seat every summer, and has also been taken by sugaring in other parts of Scotland. [Mr. Gregson and Mr. Almond met with it at Llanferras, in Wales, last year; and the Rev. Joseph Greene took a fine specimen on the 10th of June last, in the neighbourhood of Kingstown, near Dublin.] The *true furva* was first introduced in our lists by Mr. Doubleday, in his Catalogue of Lepidoptera, page 7.

HADENA SATURA, W. V.; a specimen is in the collection of the Rev. Mr. Bird, who attracted it by light in Oxfordshire; Mr. Doubleday has a specimen from Cambridgeshire. It is nearly half as large again as *adusta*, dark varieties of which are continually being taken for *satura*.

HADENA ASSIMILIS, Doubleday; described and first recorded by Mr. Doubleday in the Zoologist for 1847, page 1914; it was first taken in Scotland by Mr. Weaver in 1846." I have a specimen taken sitting on a rock in the Isle of Arran in 1847. Few specimens have since occurred and it is still in very few collections.

HELIOPHOBUS HISPIDUS, Hübner; first recorded as British by Mr. Bull in the Zoologist for 1849, page 2369—"I took one specimen of this rare *Noctua* late in September, on the sand hills at Exmouth." It had previously been taken in the Isle of Portland by Mr. T. Lighton; and in 1851 Mr. S. Stevens, "having long had a desire to search for it himself, there visited the island expressly for the purpose, and in three days and nights, with the assistance of two men, succeeded in finding fifteen fine specimens sitting on the rocks"—as recorded by him in the Zoologist for 1851, p. 3289. Mr. Stevens has distributed his specimens in most of the principal collections.

Epunda Lichenea, Hübner; first taken in this country by Mrs. Vines, in the New Forest, in the autumn of 1847, and first enumerated as British in Doubleday's Catalogue, page 10; subsequently it occurred on the Lancashire coast, "nearly 100 specimens of this insect having been taken at New Brighton" in September, 1850, as recorded by Mr. Robson in the Zoologist for 1850, page 2958. It has also occurred in plenty in the Isle of Wight.

Acronycta Myricæ, Guenée; this species, which is in our lists as *Acronycta Euphorbiæ*, is first recorded as being taken in this country by Mr. Weaver in the Zoologist for 1846, page 1439—"from May 27th to June 15th, at rest on rocks in open moors;" it has since been taken by nearly every collector who has penetrated into Perthshire during the season, and is in most of our collections. It is described by Guenée in his "Histoire Naturelle des Noctuélites," being placed immediately after *Acronycta Euphorbiæ*, *Euphrasiæ* and *abscondita*. Guenée says—"This pretty *Acronycta* appears to me very distinct from the allied species." The larva feeds on *Myrica gale* and *Salix caprœa*.

Xanthia gilvago, W. V.; first described and recorded as British in Humphrey's and Westwood's British Moths, vol. i. p. 254, with the remark—"The *true gilvago* is now for the first time introduced into the British lists, on the authority of J. F. Stephens, Esq., who has received it from the neighbourhood of Doncaster, where it was captured last September in some plenty by the Rev. Mr. Preston," [or, more correctly, by his friend, Mr. Hugh Reid.] It has since been repeatedly taken in the same locality, and also in some other parts of Yorkshire, and is now distributed in most collections. Guenée says—"It is very common in France, the larva feeding on the seeds of the elm." A species (*Xanthia ocellaris*) very closely allied to it, and only recently dis-

tinguished from it, frequents poplars. Guenée says—"The larva lives in the buds of the poplars, and is almost as abundant as that of *gilvago* is on the elms."

GORTYNA PETASITIS, Doubleday; first recorded as captured in this country by myself (Zoologist for 1846, page 1229). A notice of its habits by Mr. Edleston appears in the Zoologist for the same year at page 1347. It frequents the butter-bur, *Tussilago Petasites*, the larva feeding in the root of that plant, as observed by Mr. N. Cooke in the Zoologist for 1850, page 2932. The species was first described by Doubleday in the Zoologist for 1847, page 1914, and since has been described and figured by Freyer and Herrich-Schäffer under the name of *Vindelicia*. Since the northern collectors have learned to breed the species it has become generally distributed in collections.

CARADRINA EXIGUA, Hübner; first enumerated as British in Doubleday's Catalogue, at page 27. A specimen taken by Mr. Maitland at Ventnor is in his collection.

HYDRILLA PALUSTRIS, Hübner; a specimen taken near York is in the collection of Mr. Allis. Apparently a scarce continental species, occurring, according to Guenée, "in South Russia, Austria, the Valais, in May and July."

NONAGRIA EXTREMA, Hübner; first enumerated as British in Doubleday's Catalogue, at page 27, the species named *extrema* at page 7 having been ascertained to be really *fulva*. It has occurred in some numbers at Whittlesea-Mere in 1848 and 1849, and is in most collections. It is at once distinguished from *N. fulva* and *N. Hellmanni* by the *straight* hinder margin of the *bone-white* anterior wings. Guenée describes it under the name of *N. concolor*, conceiving it to be distinct from the *extrema* of Hübner, though probably identical with the *extrema* of Herrich-Schäffer.

NONAGRIA HELLMANNI, Eversman; the capture of this species in this country is first recorded by Mr. Bond in the

Zoologist for 1847, page 1881. Mr. Bond met with it at Yaxley in August, "sparingly at sugar;" it has since been taken in some plenty at Yaxley and Whittlesea, and is in most collections.

NONAGRIA NEURICA, Hübner; likewise first recorded as being taken in this country by Mr. Bond at page 1881 of the Zoologist for 1847; subsequently taken in some plenty at Whittlesea-Mere, and now in most collections.

NONAGRIA CANNÆ, Och.; first enumerated as British in Doubleday's Catalogue at page 7. It was first taken in 1846 by Mr. English; since then it has been freely bred by the collectors at Yaxley.

CUCULLIA LYCHNITIS, Rambur; first recorded as British by Mr. Stevens in the Zoologist for 1845 at page 1142—"I have annually, for the last three or four seasons, obtained the caterpillars of this rare shark from off the leaves and flowers of the mullein found in a chalk-pit at Arundel, in Sussex." The larva feeds in August and September, whereas that of *C. Verbasci* feeds in June and July. As the insect is still scarce in collections it may be well to bear this circumstance in mind.

CLOANTHA PERSPICILLARIS, Lin.; a single specimen taken by the late Mr. Paget near Yarmouth, the capture of which is recorded in the Entomologist, June, 1841, page 128, is in the collection of Mr. Doubleday. The species is figured and described in Humphrey's and Westwood's British Moths, vol. i. p. 230, pl. li. fig. 1. According to Guenée the species is widely dispersed on the Continent, but "never very abundant." "The larva feeds in July and August on *Hypericum*."

HELIOTHIS ARMIGERA, Hübner; first recorded as British by Mr. Edleston in the Zoologist for 1843, page 260—"a beautiful female specimen having been taken in September, 1840, off the door of an outhouse belonging to my friend

Mr. John Thomas, of Oldfield Lane, Salford, who liberally added it to my cabinet." A specimen taken near Mickleham is in the collection of Mr. Bedell, and other specimens have been taken in various localities.

HELIOTHIS SCUTOSA, W. V.; first recorded as British by Curtis, who figures and describes it in his British Entomology, folio 595; the specimen from the collection of Mr. Heysham, "was taken on the banks of the river Caldew, a little below the village of Dalston, in July, 1835."

I am not aware of any specimens having occurred subsequently. According to Freyer, the larva feeds on *Artemisia campestris*.

OPHIODES LUNARIS, W. V.; first enumerated as British in Doubleday's Catalogue, page 11; a single specimen was taken by Captain Chawner in Hampshire. Of this species Guenée says, "common in dry woods throughout Europe in May." "The larva feeds in July on oak."

DASYDIA TORVARIA, Hübner; thus noticed at page 678, vol. ii., of Humphrey's and Westwood's British Moths—"Many years ago my friend Templeton showed me a black Geometrideous moth, much larger than *M. Chærophyllata*, which he had captured on one of the mountains in Ireland. I have seen nothing like the insect in any collection that I have examined." In Stephens's Museum Catalogue this specimen is enumerated as *Dasydia torvaria*. At the meeting of the Entomological Society in November, 1853, "Mr. Westwood exhibited his original sketch of a moth taken at Ballymena, in Ireland, by Mr. Templeton; Mr. Westwood was now of opinion, from reference to Duponchel's figure and description, that it was *Cleogene Peletieraria*;" whether Mr. Stephens or Mr. Westwood is correct in the name given for this species, future observation must decide.

EUPISTERIA CARBONARIA, Lin.; first noticed as British by Mr. Doubleday in the Zoologist for 1847, page 1883,

under the name of *Eupisteria piccaria* — "This species, which is new to Britain, was taken by Mr. Hodgkinson in Perthshire." It has since been several times taken in Scotland. At the Meeting of the Entomological Society in June, 1851—"Mr. Stevens exhibited fine specimens of *Eupisteria Carbonaria*, recently taken in Perthshire by Mr. Weaver."

GEOMETRA ALNIARIA, Lin.; a single specimen, taken at the North Foreland lighthouse, is in the collection of Mr. Edwin Shepherd; it is first enumerated as British in Doubleday's Catalogue, at page 15.

TEPHRONIA CORTICARIA, W. V.; first enumerated as British in Doubleday's Catalogue, at page 17; a specimen is in the collection of the British Museum, ticketed by Dr. Leach as having been taken by him at Tenby.

ELECTRA SAGITTATA, Fab.; first noticed as British by Mr. Doubleday in the Zoologist for 1848, page 2236—"A single example of this pretty species was obtained last season near Peterborough, but I believe it was not in very good condition. A splendid female was sent to me from the same neighbourhood this week (July 15th, 1848)." A specimen was exhibited by Mr. Bond at the meeting of the Entomological Society in August, 1849. In the years 1853 and 1854, many specimens occurred in the fens of Huntingdonshire and Cambridgeshire, and the insect is now in most collections.

VENUSIA CAMBRICA, Curtis; first described and figured by Curtis in his British Entomology, folio 759, in 1839. The insect continued rare for many years, but has now been taken rather freely in several parts of the north of England, and is in most collections. It is described and figured in Humphrey's and Westwood's British Moths, vol. ii. p. 35, pl. lxiii. fig. 15. In Doubleday's Catalogue it stands as *Coremia erutaria*.

YPSIPETES RUBERATA, Freyer, long confounded with

Y. impluviata, and therefore overlooked; it is mainly distinguished by its larger size, and the anterior wings being more elongated. It is not uncommon in the fens of Cambridgeshire and Huntingdonshire.

CHEIMATOBIA BOREATA, Hübner; the capture of this insect in Britain is first recorded by Mr. Cooke in the Zoologist for 1850, page 2749—"Four males of this moth were captured at Petty Pool, Delamere, Cheshire, on the 31st of October, 1848. They were resting on the trees." In the autumn of 1850 it was taken in great abundance in the same locality (Zoologist, 2971), and was liberally dispersed by the captors among all our collections. It is at once distinguished from *C. brumata* by being larger and paler.

OPORABIA AUTUMNARIA, Boisduval; enumerated as British in Doubleday's Catalogue, at page 18. Its capture is recorded by Mr. Weaver in the Zoologist for 1852, page 3495—"It rests on the branches of birch. I captured a few specimens in Perthshire in 1851, and found it very sparingly in previous seasons." Mr. Weaver says—"This species is readily distinguished from *O. neglectata* and *dilutata* by the glossy silver and fineness of the wings, and the slenderness of the antennæ." For my own part I have never been able to satisfy myself that it was specifically distinct from *O. dilutata*. *Oporabia neglectata*, which is also noticed by Mr. Weaver in the Zoologist at page 3496, and is enumerated as a distinct species in Stephens's Museum Catalogue, but I am not aware that its claim to be considered a species has yet been satisfactorily established.

OPORABIA FILIGRAMMARIA, Boisduval; the capture of this species in this country was first recorded by Mr. Edleston in the Entomologist, at page 356, under the name of *O. polata*, under which name it is figured and described in Humphrey's and Westwood's British Moths, vol. ii. page

56, pl. lxix. fig. 9. Many specimens have been taken in the north of England and Scotland, and the species is in most collections. The *Oporabiæ approximaria* and *precursaria*, mentioned by Mr. Weaver at page 3496 of the Zoologist, are probably varieties of this species.

EUPITHECIA TOGATA, Hübner; first discovered in this country in 1845, being then met with "in a plantation of spruce firs at Black Park, Bucks, in the middle of June," as recorded by Mr. Stevens at page 1086 of the Zoologist for 1845. A figure and description of the insect by Newman is on the same page. The insect has continuously been met with at Black Park in subsequent seasons, and is now in most collections.

EUPITHECIA PUSILLATA, Hübner; the *true pusillata* (that of Haworth being the *Begrandaria* of Boisduval) was first enumerated as British in Doubleday's Catalogue at page 19. Mr. Doubleday writes—"I have three specimens taken by Mr. Wood, gardener to Captain Chawner, Ashburton, Devonshire; the large central black spot in the anterior wings is a good distinguishing character."

EUPITHECIA PALUSTRARIA, Doubleday; first recorded and described by Doubleday in the Zoologist for 1850, App. cv. "This insect appears to be common in the fens of Huntingdonshire; it flies by day, sporting in the sunshine in company with *Pyrausta cespitalis*, from which it is not easily distinguished on the wing." This species is readily recognised by the almost unicolorous anterior wings, and conspicuous white spot at the anal angle.

EUPITHECIA CALLUNARIA, Sta.; first recorded and described by Doubleday in the Zoologist for 1850, App. cv. The species is very common on heaths in the north of England and Scotland, but it is an unsatisfactory obscure looking insect, and it excites little surprise that it remained so long undescribed.

EUPITHECIA INNOTATA, Hübner; first enumerated as British in Doubleday's Catalogue, at page 19; the species has been bred by the Rev. Mr. Turner, and was taken by the late Mr. Paget at Yarmouth.

EUPITHECIA LANCEOLARIA, Rambur?; first enumerated as British in Doubleday'a Catalogue, at page 19. Mr. Doubleday has a specimen which *may be* identical with Rambur's species; it was taken at Sudbury in Suffolk.

EUPITHECIA TENUIATA, Hübner; first enumerated as British in Doubleday's Catalogue, at page 19; its capture is recorded by Mr. Sircom in the Zoologist for 1851, at page 3287: it is a pretty and distinct looking species; the larva feeds in the catkins of the sallow in May.

EUPITHECIA ULTIMARIA, Stevens; thus noticed in the Proceedings of the Entomological Society for October, 1851—"Mr. S. Stevens exhibited *Eupithecia ultimaria*, Ramb., Boisd., Dup., a new British species, taken at Dover in the middle of September." The insect in question appears to have no affinity to the continental *ultimaria*, and Mr. Doubleday thinks it may be the *expressaria* of Herrich-Schäffer. The question of its proper name must remain for further consideration.

EUPITHECIA INDIGATA, Hübner; first enumerated as British in Doubleday's Catalogue, at page 19; the capture of it at Birch Wood is recorded by Mr. Douglas in the Zoologist for 1851, at page 3247. I have received it from Scotland, and it is now in most collections; formerly, no doubt, it was mixed with *E. minutata*.

EUPITHECIA SATYRATA, Hübner; first recorded as British, as *E. fagicolaria* by the Rev. Joseph Greene in the Zoologist for last February, page 4187; but the insect had been in our collections several years, having been taken near Mickleham by Messrs. Douglas and Weir in June, 1849; the Rev. Mr. Greene found the insect at Halton, Bucks,

"extremely local, being confined to one open spot in Beech Wood, but very common there." In the Zoologist for July last, page 4370, Mr. Harpur Crewe records having bred this species from larvæ found on *Gentiana campestris* in August and September, in company with the larvæ of *E. piperata*. This species is figured by Hübner, H.-S., and Freyer; it is rather a large species, and might be well placed between *E. Callunaria* and *E. subnotata*.

Eupithecia Pimpinellata, Hübner, (distinct from *Austerata*), was bred in 1851 by the Rev. J. S. Henslow, from larvæ found in August, 1850, feeding on the flowers of *Pimpinella Saxifraga*, at Hitcham, Suffolk. (A notice of this appeared in the Zoologist for 1852, page 3358, but the name of the insect was not then ascertained.)

Acidalia obsoletaria, Rambur; first enumerated as British in Doubleday's Catalogue, at page 19; this species has been taken near Manchester. Mr. Doubleday has a pair he received from Mr. Edleston.

Acidalia perochraria, Tischer; first enumerated as British in Doubleday's Catalogue, at page 19. It has occurred in considerable plenty on the Essex coast, at Southend and St. Osyth, and is now in most collections.

Acidalia holosericearia, Parreyss; first enumerated as British in Doubleday's Catalogue, at page 19. It occurs commonly in the neighbourhood of Bristol; its capture there is recorded by Mr. Sircom in the Zoologist for 1851, at page 3288; it is now in most collections.

Schrankia turfosalis, Woeke (*Hypenodes humidalis*, Doubleday); first recorded as British, and described by Doubleday, in the Zoologist for 1850, App. cv.—"It was captured in the bogs of Ireland, in 1848, by Mr. Weaver, and has been discovered in abundance this season by Messrs. N. Cooke and Greening, of Warrington." In the Zoologist for 1851, Mr. Harrison, of Keswick, writes, at page 3244,

concerning this species, "From the middle of July, up to the 8th of August, it might be seen any fine evening, between the hours of six and eight, flying on most of our swamps in great plenty. To give you an idea of its numbers, I may state that I took forty specimens in less than one hour, and might have taken as many dozens, could I have boxed them fast enough."

Botys terrealis, Treitschke; first enumerated as British in Doubleday's Catalogue, at page 14. The insect is nearly allied to *B. fuscalis*, but the anterior wings are narrower and more pointed, and the posterior wings are darker. [A few specimens have occurred at Llanferras, in Wales; it has also been taken] in Scotland, but is rare, and still in few collections. According to Fischer, the larva feeds on the golden rod in September.

Rhodaria sanguinalis, Lin.; first recorded as British by Mr. Doubleday, in the Zoologist for 1849, at page 2547.—"This lovely little *Pyralis* was taken on the 25th of June, at New Brighton. I had previously received two specimens, in rather a faded condition, from the fens." At page 2932 of the Zoologist for 1850, further captures of this species are recorded, and it has since been taken in great plenty on the sandhills of the Cheshire coast, and is now in all collections.

Asopia nemoralis, Scopoli; a single specimen is in the collection of Mr. Hemmings; it was taken June 26th, 1851, at Holm Bush, near Henfield, Sussex; it was exhibited at the meeting of the Entomological Society, in October, 1853. I believe a few others were taken at the same time. It is a very distinct species, and is not uncommon on the Continent.

Simaethis vibrana, Hübner; a specimen of this, taken September 11th, 1853, near Hurst, Sussex, is in the collection of Mr. Hemmings: it was exhibited at the meeting of

the Entomological Society in October, 1853. This specimen was taken amongst *Inula dysenterica*, and in all probability the larva feeds upon that plant. Should this prove to be the case, it will show that this is the *Tinea Bjerkandrella* of Thunberg, which was bred from larvæ on *Inula salicina*. It is very distinct from our other British species of *Simæthis*. Mr. S. Stevens has also a specimen taken near Arundel.

EUDOREA ALPINA, Dale; first recorded and described by Curtis, in the Annals and Magazine of Natural History, 2nd series, vol. v. page 116; the species has occurred on several of the Scotch mountains, but fine specimens seem very scarce.

CHILO CICATRICELLUS, Hübner; a specimen in Mr. Shepherd's collection was exhibited at the meeting of the Entomological Society in September, 1852; it was "taken flying, near Dover." The larva feeds in the stems of the bull-rush (*Scirpus lacustris*), in June, and changes to pupa within the stem, the perfect insect appearing in July.

LOZOTÆNIA DUMETANA, Treit.; first enumerated as British in Doubleday's Catalogue, page 21. It has only been taken by Mr. Weir in the neighbourhood of Lewes; it is readily distinguished from other British species of the genus by the *whitish underwings*.

LEPTOGRAMMA SCOTANA, Guenée; first enumerated as British in Doubleday's Catalogue, at page 21; it is described in the Appendix to Stephens's Museum Catalogue. It has been taken in Perthshire by Mr. Weaver.

PERONEA MACCANA, Treit.; described and figured as *Peronea marmorana* in Humphrey's and Westwood's British Moths, vol. ii. p. 159, pl. xciv. fig. 9, from a specimen taken by Mr. Bentley in Epping Forest in October, 1824; several specimens have since been bred by Mr. Weaver, from larvæ found in Scotland on the *Vaccinium myrtillus*.

PERONEA LIPSIANA, W. V.; first enumerated as British in Doubleday's Catalogue, at page 21, as a doubtful variety of *P. rufana;* in the past season, Mr. Bouchard bred a series of this insect, and had not a single *rufana* among them.

PERONEA CALEDONIANA, Bentley; first enumerated as British in Doubleday's Catalogue, at page 22; it is described in the Appendix to Stephens's Museum Catalogue. I have frequently taken it on boggy moors in the south of Scotland; its small size readily distinguishes it from the allied species.

PERONEA PERMUTANA, Dup.; first recorded as British by Mr. Cooke in the Zoologist for 1848, page 2271—"On the 13th of August, I took three specimens of this insect on the wing, at dawn of day, at New Brighton, flying over a species of wild rose which grows there in profusion." It has since been taken and bred in profusion in the same locality, and has also been met with plentifully on Barnes Common. It is extremely like the *borana* variety of *variegana.*

PARAMESIA SHEPHERDANA, Stephens; first enumerated and described by Stephens in the Museum Catalogue; the locality there given is, however, erroneous, as mentioned by Mr. Doubleday in the Zoologist for 1852, page 3583. "Mr. Shepherd met with larvæ in the fens of Cambridgeshire; it feeds upon the meadow-sweet, (*Spiræa Ulmaria*)." Mr. Doubleday now writes me, that it feeds upon *Eupatorium Cannabinum,* and not upon *Spiræa.*

DICTYOPTERYX ULIGINOSANA, Bentley; first recorded, described and figured in Humphrey's and Westwood's British Moths, vol. ii. p. 139, pl. lxxxvi. fig. 12. "Two specimens were taken at Whittlesea-Mere in July, 1824, by Mr. Bentley, in whose cabinet they are preserved." I know of no recent specimens.

ANTITHESIA CAPRÆANA, Hübner; first recorded as British

in the Proeeedings of the Entomological Soeiety, for July, 1849—"Mr. Weir exhibited speeimens of *Antithesia Capræana*, reared froms allow leaves." Mr. Doubleday writes me—"I have bred it from sallows, but it seems rare here, and I am not aware that it is common anywhere—it is a very distinct species."

ANTITHESIA OCHROLEUCANA, Hübner; first recorded as British by myself, in the Zoologist for 1848, page 1987—It is a common species in gardens, the larva feeding on the rose.

ANTITHESIA PRÆLONGANA, Guenée; first reeorded as British by myself, in the Zoologist for 1848, at page 1988—I have several times met with it Seotland.

ANTITHESIA DIMIDIANA, Treit.; the capture in this country is first reeorded by Mr. Weaver, in the Zoologist for 1845, at page 847, as *Antithesia Weaverana*. In the Zoologist for 1848, page 1988, I deseribed it nnder the name of *A. leucomelana*. It is not at all an uneommon species in Seotland and in the north of England.

ANTITHESIA SAUCIANA, Hübner; the first notiee we find of this as a British inseet is in the Proeeedings of the Entomological Soeiety, for April, 1849, when "Mr. Douglas stated that the *Tortrix*, taken last season at Leith Hill, Surrey, by Mr. Benjamin Standish, was the true *Penthina sauciana* of Hübner." The inseet has since oeeurred in plenty in the north of England, among bilberry, and is now in most eollections.

ANTITHESIA GREVILLANA, Curtis; figured and deseribed by Curtis, in his British Entomology, fol. 567, from speeimens captured by Dr. Greville, and Mr. James Wilson in Sutherlandshire, in July. Two or three specimens have since been taken by Mr. Weaver.

SPILONOTA ROSÆCOLANA, Doubleday; thus notieed by Mr. Douglas, in the Zoologist for 1849, page 2364—"From

rose leaves I reared *Spilonota aquana, S.*——, N. S." This latter, the *new species*, is enumerated in Doubleday's Catalogue, at page 23, as *rosæcolana;* and also described in the Zoologist for 1850, Appendix cvi. It is not uncommon in gardens in some localities. The rounded costa of the anterior wings readily distinguishes it.

SPILONOTA AMŒNANA, Dup.; first noticed as British by myself, in the Zoologist for 1848, page 1988—The insect had then occurred in many localities, and has since been met with plentifully: it frequents the *Rosa spinosissima.*

SPILONOTA NEGLECTANA, Dup.; first enumerated as British in Doubleday's Catalogue, page 23—the species had previously been confounded with *dealbana*, under the name of *sociana*. From *dealbana* it is distinguished by the basal portion of the anterior wings being of a darker colour, with a blueish tint. From Mr. Doubleday's and Mr. Douglas's observations this frequents poplars.

SPILONOTA ACERIANA, Dup.; first recorded as British by myself, in the Zoologist for 1847, page 1989, as *Philaleea Aceriana;* it had previously been confounded with *dealbana*, It is a very common species among poplars in July.

GRAPHOLITHA MINUTANA, Hübner; described and first recorded as British by Douglas, in the Zoologist for 1845, at page 844, under the name of *Carpocapsa minutana.* It is by no means uncommon on palings under white poplars, at Camberwell and Blackheath, in July, and is now in most collections.

GRAPHOLITHA GEMINANA, Stephens; first enumerated and described by Stephens, in his Museum Catalogue, page 35 and 99. Specimens are in the collection of Mr. Shepherd; according to Stephens it has occurred at Whittlesea-Mere, and in Yorkshire. [Mr. Buxton met with this, in great abundance, at the beginning of August, 1854, on Rivington Pike, near Bolton le Moors.]

PHLÆODES CRENANA, Hübner; first enumerated as British in Stephens's Museum Catalogue, at page 36. It has been taken in Scotland by Mr. Weaver.

ANCHYLOPERA UPUPANA, Treit.; first noticed as a British species in the Proceedings of the Entomological Society for April, 1849, when "Mr. Douglas stated that Mr. H. Doubleday had informed him, that last year he had bred the *Phoxopteris Upupana* of Hübner, a very rare species of *Tortricidæ* and new to this country." The insect has since occurred at Darenth Wood, Black Park, near Hastings, Epping, &c., but still continues rare.

ANCHYLOPERA COMPTANA, Frölich; first recorded as British by Mr. Douglas, in the Entomologist, at page 385, under the name of *A. cuspidana*. "This pretty little moth is, I believe, new to Britain; it is a very different thing from the insect figured under this name in Wood's Index; taken at Riddlesdown." It is figured and described as *A. cuspidana* in Humphrey's and Westwood's British Moths, vol. ii. page 132, pl. lxxxv. fig. 15. On the chalk downs at Sanderstead and Mickleham this insect occurs in the greatest profusion. Last spring it was on the wing as early as the 14th of April. It is double-brooded, the second brood appearing in August.

BACTRA NIGROVITTANA, Stephens; first enumerated and described in Stephens's Museum Catalogue, at page 40 and 99. It is uniformly smaller than *B. lanceolana*, and does not appear to vary at all; I have seen several specimens from different localities in Scotland.

PŒCILOCHROMA OPPRESSANA, Treit.; first enumerated as British in Stephens's Museum Catalogue, at page 43; Mr. Doubleday writes me—"I have a pair taken in our forest. I have never seen any other British specimens."

PŒCILOCHROMA OCCULTANA, Douglas; first recorded and described by Douglas in the Zoologist for 1846, at page

1267; a figure of it is given on the next page—"I have three specimens of this insect, two taken at Birch Wood, on the 2nd of July, and one at Weybridge in June, all out of fir trees." It has since been repeatedly taken among firs and larches, and is now in most collections.

PŒCILOCHROMA SIGNATANA, Douglas; first recorded and described by Douglas as *Sericoris signatana*, in the Zoologist for 1845, page 844—"I beat three or four specimens of this species out of a hedge at Sanderstead Downs, July 9th, 1843." It has since been frequently taken at Sanderstead and Mickleham, and has also been bred by Mr. Weir "in a cage containing leaves from several plants." Zeller bred it from *Prunus Padus*.

PŒCILOCHROMA STABILANA, Stephens; first enumerated and recorded in Stephens's Museum Catalogue, at pages 45 and 100. In the Zoologist for 1852, page 3584, Mr. Doubleday remarks, that he "first noticed this insect last autumn, in a box from Yaxley; it struck me as having a peculiar appearance, and I thought it might prove a distinct species; it differs considerably in form from *Solandriana*, the wings being broader, in this respect resembling *sordidana*, but it is destitute of the peculiar glossiness of that species; it feeds upon *Myrica Gale*.

HALONOTA CIRSIANA, Zeller; first enumerated as British in Doubleday's Catalogue, page 25. The larva feeds in the stems of thistles (*Cirsium palustre*), and may be found there during the winter.

HALONOTA NOVANA, Guenée; first enumerated as British in Doubleday's Catalogue, at page 25; Mr. Doubleday now writes me, "*H. novana* is, I believe, merely a variety of the ♂ *Scutulana*."

HALONOTA TURBIDANA, Treit.; first recorded as a British species, described and figured, by Logan in the Zoologist for 1848, page 2034; the larva, no doubt, feeds in the flower

stems of the butter-bur (as *H. Brunnichana* feeds in the flower stems of the coltsfoot). I found the perfect insect at Chudleigh, Devon, in June, 1850, in some plenty among the butter-bur (*Petasites vulgaris*).

Semasia rufillana, Zeller; first enumerated as British in Doubleday's Catalogue, at page 25; it had previously been confounded with *Ianthinana*, under the name of *Lediana*; it occurs at Sanderstead Downs and Headley Lane.

Coccyx cosmophorana, Treit.; first recorded as British by Mr. Doubleday, in the Zoologist for 1847, at page 1884, having been captured by Mr. Hodgkinson, in Scotland; a few specimens have since been taken in Scotland.

Coccyx Strobilella, Linn.; first recorded as British in the Proceedings of the Entomological Society for June, 1849, when Mr. Douglas exhibited specimens, as did also Mr. Shepherd, he having reared one from cones of spruce fir; "the larva had fed in the centre" of the cone, and "changed to a pupa, about two inches from the apex." An account of the habits of the larva and pupa is given by Mr. E. Shepherd, in the Zoologist for 1850, page 2748. The insect has since been bred abundantly, and is now in all collections.

Coccyx finitimana, Gucnée; first enumerated as British in Doubleday's Catalogue, at page 25; several specimens of this have been met with in Scotland, by Mr. Weaver, Mr. Hodgkinson, and other collectors.

Coccyx pygmæana, Hübner; first enumerated as British in Stephens's Museum Catalogue, at page 51, but it would appear that this was the species described by Haworth as *subsequana*. "Posterior wings whitish, with the apex broadly fuscous." "Imago in April."

On the Continent the species frequents pine trees, from the end of March to May. The larva feeds on the pine leaves in July.

COCCYX NANANA, Treit.; first recorded as British, and described by Douglas, in the Zoologist for 1846, at page 1267, under the name of *Sericoris tenebrosana;* it is also figured at page 1268. The species is excessively abundant among spruce firs, and it seems incredible that it should have previously been entirely overlooked in this country.

COCCYX VACCINIANA, Tischer; first recorded as British by Mr. Chant, in the first volume of the Entomological Magazine, page 181, in a notice of an "Entomological Tour in South Devon, by Messrs. Chant and Bastley." "May 31st, took a new *Tortrix*, for which we propose the name *Myrtillana;* we beat it out of the *Vaccinium Myrtillus*, which was growing in abundance." Under this name, *Sericoris Myrtillana*, it is described and figured in Humphrey's and Westwood's British Moths, vol. ii. page 146, pl. lxxxix. fig. 15. It has recently been taken among the bilberry in the north of England, in great plenty.

RETINIA TURIONELLA, Linn.; this, the *true Turionella*, was first recorded as British by myself, in the Zoologist for 1848, page 1990.—"I only know of one specimen, which was taken by the Rev. W. Johnson, off a fir tree, at Birch Wood, several years ago." Several specimens have since been taken at West Wickham Wood, and it has also been bred by Mr. Waring. The larva feeds in the young shoots of the Scotch fir, and the crippled distorted appearance they assume in *April* betrays the presence of the larva. The larvæ of *Buoliana* and *pinicolana* do not distort the shoots in which they feed, till *May* and *June*.

RETINIA SYLVESTRANA, Curt.; first recorded and described by Curtis in the Annals and Magazine of Natural History, 2nd series, vol. v. page 111.—"It was first discovered by Mr. Dale, at Bournemouth, and from the 23rd June to the 1st July, we found it there in 1846. It inhabits

the pinasters on the cliffs. It has been distributed amongst Entomologists by the name of *duplana*."

Opadia funebrana, Treit.; first recorded as a British species by myself, in the Zoologist for 1848, page 1989. I have two specimens, and I believe a few others have been since met with. The larva feeds in the interior of plums, and is very common, as those who are in the habit of preserving plums well know.

Ephippiphora floricolana, Hübner; first recorded as British, also described and figured, in Humphrey's and Westwood's British Moths, vol. ii. page 126, pl. lxxxiii. fig. 20, as *Pseudotomia notata*, having been "taken by Mr. Bentley, near Woolwich." The species has since been taken freely at Plumstead, among maples, and is now in most collections.

Ephippiphora Weirana, Douglas; in the Proceedings of the Entomological Society for February, 1850, we read—"Mr. Douglas exhibited a new species of *Tortrix*, allied to *Stigmonota redimitana*, Guenée; which he proposed to call *Weirana*." The species is described in the Proceedings of the Entomological Society for April, 1850, where we are informed that it was "taken at the end of May, flying in sunshine round beech-trees at Mickleham."

Ephippiphora coniferana, Ratzb.; first recorded and described as British by myself in the Zoologist for 1848, page 1988. The species in not uncommon in the north of England and Scotland, and has occurred occasionally in the south.

Dicrorampha senectana, Guenée; first distinguished as a British species by Mr. Doubleday, and enumerated in his Catalogue at page 26. Its capture is first recorded by Mr. Sircom in the Zoologist for 1851, page 3287; this and the four following species form a very puzzling little group,

and a collector rarely identifies his captures without much trouble.

DICRORAMPHA ACUMINATANA, Zell.; first enumerated as British in Doubleday's Catalogue, at page 26, as *Dicrorampha caliginosana*. It has occurred at Charlton, near Bristol, and at Miekleham, in August. From the latter locality Mr. Douglas exhibited specimens at the September meeting of the Entomological Society in 1851.

DICRORAMPHA SATURNANA, Guenée; first distinguished as a British species by Mr. Doubleday, and enumerated in his Catalogue at page 26.

DICRORAMPHA PLUMBAGANA, Treit.; first distinguished as a British species by Mr. Doubleday, and enumerated in his Catalogue at page 26.

DICRORAMPHA ULICANA, Guenée; first distinguished as a British species by Mr. Doubleday, and enumerated in his Catalogue at page 26.

DICRORAMPHA CONSORTANA, Stephens; first recorded in the Proceedings of the Entomological Society for September, 1851, when "Mr. Douglas exhibited an apparently new species of *Stigmonota*, taken at Headley Lane, August 10th." In Stephens's Museum Catalogue it is enumerated and described as *D. consortana*, at pages 60 and 100. It may be said to resemble a small dark *Ephippiphora Leplastriana;* it is yet in few collections.

CATOPTRIA WIMMERANA, Treit.; thus noticed by Mr. Douglas in the Entomologist, at page 384—"*Carpocapsa* ——, a new species allied to *C. pupillana*, but abundantly distinct. Taken on the sea wormwood near St. Osyth, but very local." In Humphrey's and Westwood's British Moths, vol. ii. p. 138, it is described as *C. maritima*. It has been frequently taken since by collectors on the coast, and is now in most collections. The *Grapholita lacteana*, enumerated

as a distinct species in Stephens's Museum Catalogue, I believe to be only a variety of this.

CATOPTRIA MODESTANA, H.-S.; first recorded as British by Mr. Douglas, in the Zoologist for 1851, page 3129, among insects occurring at Charlton Pit—"*Catoptria* ——; a new species, probably either *decolorana* or *modestana* of Herrich-Schäffer. I found it here last August." It is not very uncommon at Charlton, but I am not aware that it has occurred elsewhere.

CATOPTRIA CŒCIMACULANA, Hübner; first enumerated as British in Doubleday's Catalogue, at page 26. The insect is not at all uncommon at Mickleham and in other localities on the chalk in July.

CATOPTRIA CITRANA, Hübner; first enumerated as British in the preface to the Zoologist for 1847, page 11; its capture at Southend, Essex, in July, 1848, is recorded by Mr. Hodgkinson in the Zoologist for that year, at page 2330. It is a very conspicuous distinct species, and the wonder is that it was not previously known as a British species.

CNEPHASIA CONSPERSANA, Douglas; described by Douglas in the Zoologist for 1846, page 1267, and figured on the following page. Mr. Douglas "took three specimens on the salt marshes, near St. Osyth, Essex, in July, 1847."

CNEPHASIA CRETACEANA, Curtis; described and recorded by Curtis in the Annals and Magazine of Natural History, 2nd Series, vol. v. p. 112—"I never met with this insect but once, and then in abundance on the paling round Dover Castle, in July, 1829."

ERIOPSELA QUADRANA, Hübner; first described as British by Douglas in the Zoologist for 1846, page 1269, as *Orthotænia quadrana*. "The locality of Sanderstead Downs there given is erroneous; it should be Darenth Wood, and the date May instead of July."—J. W. D.

CLEPSIS RUSTICANA, Treit.; first enumerated as British in Doubleday's Catalogue, at page 24; the species has occurred on boggy moors in Scotland, and in plenty in the fens of Cambridgeshire. It is now in most collections.

EUCHROMIA ARBUTELLA, Linn.; first enumerated as British in Doubleday's Catalogue, at page 23; the insect has been taken rather freely by the collectors who have visited Scotland, and is now in most collections.

ORTHOTÆNIA ERICETANA, Bentley; (*trifoliana*, Zeller, in Doubleday's Catalogue). First recorded, described and figured in Humphrey's and Westwood's British Moths, vol. ii. p. 150, pl. xci. figs. 3, 4. A subsequent capture in the Isle of Wight by Mr. Bentley is recorded in the Zoologist for 1847, page 1803. The insect has also occurred in Scotland, and has been taken near Bristol, by Mr. Allen Hill.

SERICORIS HERBANA, Guenée; enumerated as British in Doubleday's Catalogue, at page 23. I have never seen any specimens that appeared distinct from the common *lacunana*.

SERICORIS EUPHORBIANA, Dup.; enumerated as British in Stephens's Museum Catalogue, at page 74; an old specimen is in the collection of Mr. Shepherd. It is a common continental species; the larva feeding on *Euphorbia aquatica*.

SERICORIS LITTORALIS, Curt.; first recorded, described and figured in Humphrey's and Westwood's British Moths, vol. ii. p. 143, pl. lxxxviii. fig. 13, having been "taken on the southern coast of England, by Messrs. Dale and Curtis." It was described by Douglas, in the Zoologist for 1846, at page 1269, under the name of *Orthotænia venustana*. I have received the species from Belfast, and Mr. Stevens has bred it from larvæ feeding on *Statice armeria*, below Gravesend.

MIXODIA PALUSTRANA, Lienig; first recorded as British by Mr. Curtis, in his British Entomology, fol. 364, as *Or-*

thotœnia cespitana: "18th June, Heath, side of a hill, Ambleside; and 14th July, amongst fir-trees, Black-wood, Loch Rannoch." I have several times taken the insect among fir-trees, in Torwood, Stirlingshire, and it has been taken by others collecting in Scotland.

MIXODIA TENERANA, Dup.; first recorded as British, and also described and figured, in Humphrey's and Westwood's British Moths, vol. ii. page 172, pl. xcix. fig. 10, as *Orthotœnia pinetana*. It does not seem at all uncommon among fir trees throughout the country. It was first "taken in Dorsetshire, by Mr. Dale."

LOBESIA SERVILLANA, Dup.; first enumerated as British in Doubleday's Catalogue, at page 26; it is a scarce species, but occurs at Epping on Sallows, and also in the fens.

LOBESIA SIMPLANA, F. v. R.; first enumerated as British in Doubleday's Catalogue, at page 26; it has been taken at Darenth Wood, and in the fens, but is rare.

CHROSIS AUDOUINANA, Dup.; described and figured as *Argyrotoza apicalis* in Humphrey's and Westwood's British Moths, vol. ii. page 169, pl. xcviii. fig. 8, having been "taken by Mr. Bentley, in July, at Tonbridge." In the Zoologist for 1846, page 1268, it is described by Douglas and figured, under the name of *Argyrotoza Audouinana*. Mr. Douglas "took two specimens at Black Park, on the 28th of June, 1845;" and it has since been taken in the same locality, and near Epping, but still continues rare, and is in few collections.

CHROSIS RUTILANA, Hübner; first recorded as British, described and figured by Newman, in the Zoologist for 1845, at page 807—Mr. Bedell having "on the 7th of July, 1844, while beating the juniper trees, on Sanderstead Downs, for *Macrochila marginella*, obtained five specimens of" this insect. It is very common among the junipers at Sanderstead and Stoat's Nest; the larva feeds on the juniper berries.

Since the re-discovery of this speeies, it has been identified as the *Tinea sanguinella* of Haworth.

ARGYROLEPIA SCHREBERSIANA, Frölich; first enumerated as British in Doubleday's Catalogue, at page 27; a single specimen, taken at Yaxley by Mr. Bouchard, is in the collection of Mr. E. Shepherd. [Another specimen, probably from the Norfolk fens, is in the collection of Mr. Buxton.]

ARGYROLEPIA MUSSEHLIANA, Treit.; first enumerated as British in Doubleday's Catalogue, at page 27; a specimen has been taken by Mr. Weaver, in the west of England.

ARGYROLEPIA CNICANA, Doubleday; first enumerated as British in Doubleday's Catalogue, page 27. It has much resemblanee to *badiana*, with which it has probably long been confounded, but frequents thistles, whereas the larva of *badiana* feeds in the stems of burdock. It may readily be distinguished by the narrower central fascia of the anterior wings not expanding on the inner margin, and being paler coloured.

EUPŒCILIA ATRICAPITANA, Stephens; first noticed as British by myself, in the Zoologist for 1848, at page 1990, as *E. dubitana;* recorded as being taken at Charlton, in July and August, by Mr. Douglas, under the name of *Eupœcilia* ———, in the Zoologist for 1851, page 3129.

It is described in Stephens's Museum Catalogue, at page 103, under the name of *atricapitana*.

EUPŒCILIA CARDUANA, Zeller; first enumerated as a distinct British species in Stephens's Museum Catalogue, at page 81; Doubleday having given it as a synonym for *Sodaliana*, from which it differs in the central fascia being more oblique; it was formerly taken by Mr. Sircom near Bristol, and is not uncommon in the Hilly Field at Headley Lane. The true *Sodaliana* appears very scarce.

EUPŒCILIA AFFINITANA, Douglas; first recorded and

described by Douglas in the Zoologist for 1846, at page 1269, a figure being given on the preceding page. Mr. Douglas says—"This moth I found on the salt marshes near St. Osyth, Essex, on the 8th of July, 1845. It is nearly related to *C. griseana*, Haworth; and to *C. Vectisana*, Westwood, whence the name I have given it."

EUPŒCILIA VECTISANA, Westwood; first recorded, described and figured in Humphrey's and Westwood's British Moths, vol. ii. p. 176, pl. c. fig. 15, from specimens "taken in a salt marsh, near Ryde, in the Isle of Wight, flying over the grass, in the evening of the 5th of August, 1843, by S. Stevens, Esq." Doubleday gives this as a doubtful synonym for the preceding; Stephens gives them as doubtfully distinct. The similarity of locality favours the idea of their being identical; future observation must decide the point.

EUPŒCILIA NOTULANA, Zeller; the first record of its capture in this country is from the pen of Mr. Allen Hill, in the Zoologist for 1850, page 2883—"*Eupœcilia notulana;* beginning of July, flying at sunset by the side of ditches, in marshes and old fish ponds, over *Carex paludosa;* numerously." At page 2956 of the same volume, Mr. Allen Hill gives the further observation—"It flies for a very brief space of time at sunset (say ten minutes), and as it is rather numerous with me in its habitat, I should fancy it must have escaped the notice of collectors so long chiefly from that circumstance."

EUPŒCILIA ANTHEMIDANA, Curtis; bred by Mr. Curtis from the flower head of *Anthemis Cotula*, but I believe not hitherto anywhere recorded. It is readily distinguished by its size, being much less than *E. nana*. I have a specimen I took at Charlton Sand Pit, August 20th, 1849.

EUPŒCILIA FLAVICILIANA, Doubleday; first enumerated in Doubleday Catalogue, page 27. I believe it is still un-

described; the most striking character is the yellow cilia of the anterior wings. Mr. Douglas has a specimen taken at Sanderstead.

LOZOPERA DILUCIDANA, Stephens; first enumerated as a distinct species in Stephens's Museum Catalogue, at page 84. It is the *Francillana* of most collections, the *true Francillana*, in which *the first fascia is entire*, and *not interrupted towards the costa*, being comparatively rare. Mr. Douglas has bred *dilucidana* from the stems of the wild parsnip (*Pastinaca sativa*).

Of the following *Tortricina*, enumerated in Stephens's Museum Catalogue as *British species*, I am unable to give any satisfactory information: therefore I think it more advisable to omit them for the present; should they hereafter prove to be distinct, I shall have much pleasure in introducing them in subsequent years.

Antithesia sororculana, Spilonota alnetana, Graptolitha excruciana, Pamplusia alticolana, Ephippiphora Lathyrana, E. Heegerana, E. fissana, Catoptria asseclana, C. æmulana, Cnephasia perterana, C. perplexana, C. incanana, Argyrotænia cognatana, A. fuscociliana, Sericoris Dormoyana.

In the foregoing enumeration of novelties since 1835, I have not mentioned the few new *Crambina* which are already noticed in my "Systematic Catalogue;" and with reference to the *new Tineina*, which include nearly half our present species, I am compelled by actual want of space to refer the reader to the Insecta Britannica—Lepidoptera Tineina, where they will find all the information that I possessed at the close of 1853.

THE NEW BRITISH SPECIES IN 1854.

ANTHROCERA MINOS, W. V.; (see frontispiece, fig. 1*); first recorded as British in the Zoologist for last January, page 4180, by Mr. Newman—"I am informed by my friend, Mr. Thomas H. Allis, that about a dozen specimens of *Zygæna Minos* were taken last summer on the west coast of Ireland, by Henry Milner, Esq., of Nunappleton, near York." On the 27th of last June, Mr. A. G. More sent me a number of specimens for distribution among the members of the Entomological Society; and in his letter dated from Ardrahan, he says, "the *Anthrocera* is quite plentiful about here, but the weather has been so bad, that I have found some difficulty in procuring really good specimens. It appears about a fortnight earlier than the spotted species (*Filipendulæ*). I first captured it in 1851, but did not recognize its value until I saw some of Mr. Milner's specimens at Doncaster. I believe his locality was in Clare, and mine is in Galway, which shows the range of the species may be somewhat extensive in these parts." This is readily distinguished from our other British species, the anterior wings having three *elongate* red marks, and not round spots; on the Continent several species are marked in this way, and it is very possible some of these may be found in this country. I mention this to show, that if a collector meets with an *Anthrocera* with the three elongate red marks, it does not follow, as a matter of course, that it will be *Minos*.

PETASIA NUBECULOSA, Esper. A specimen of this, taken by Mr. Cooper at Rannoch last spring, is in the

* Expands 1¼ inch: the figure is slightly magnified.

collection of Mr. Hodgkinson. Allied to *Cassinea*, but larger and darker, the anterior wings being "brown grey, mixed with reddish grey," according to Treitschke, who says, that "the larva feeds in May and June on birch and elm," and that "the perfect insect is found on the trunks of trees, in early spring, simultaneously with *Ceropacha flavicornis*."

SPÆLOTIS VALLESIACA, H.-S. (fig. 80; not of other authors); (see frontispiece, fig. 2*), has been taken by Messrs. Carter, Evans, N. Cooke, C. S. Gregson, &c., in Wales, at the end of July. Mr. Carter informs me, this *Noctua* is found "all along the coast of North Wales, commencing in Flintshire, near the Vale of Clwyd, and thence in Denbighshire, adjoining Carnarvonshire, in Llanrwst, also at the foot of Snowdon." Mr. Carter "found it stretching itself on stunted plants, and also sitting upon the face of rocks."

There appears to be some confusion with regard to this species amongst the Continental writers; hence I am unable to quote it as the *Vallesiaca* of Boisduval. The *Vallesiaca* of Freyer and Guenée it most certainly is not, for their species has in the male pure white underwings.

The insect is not very nearly allied to any of our previously known British species.

MIANA EXPOLITA, Doubleday, n. sp.; taken by Messrs. Law and Sang near Darlington. Mr. Law writes—"We observed it in great numbers flying in the hot sunshine about the middle of July, but did not take many." The species may be readily known, being *much smaller* and darker than *fasciuncula*, and *extremely glossy*; the posterior wings are unicolorous grey, with pale grey cilia; the shape of the anterior wings is also very distinctive, the hinder margin not being elbowed as in *fasciuncula* and *strigilis*.

* Expands 1½ inch: the figure is slightly magnified.

EUBOLIA MÆNIATA, Scopoli; (see frontispiece, fig. 3*). A specimen of this is in the collection of Mr. C. S. Gregson, who "obtained it from Mr. Reeves of Carlisle, many years ago, along with a poor *depuncta;* Mr. Reeves told Mr. Gregson he took it himself on one of the high hills near Baron Wood." The larva feeds on broom at the end of May, the moth appearing in July. Readily distinguished from our other British species; it comes nearest to *mensuraria*, but the blueish-slaty colour of the anterior wings, the straightness of the anterior margin of the central fascia, the large projection from the middle of its posterior margin, and the yellow outlines of these margins, would readily enable any one to recognize it.

SIMAETHIS PARIETARIÆ, Stainton, n. sp. At the end of July, Mr. Harding found a small larva feeding on the *Parietaria officinalis* at Deal, and forwarded some of them to me for examination; I had no conception, however, that they would have produced a *Simaëthis*, but anticipated a species of *Butalis*. In the month of August, the perfect insects made their appearance, and are so excessively like *S. Fabriciana*, that I have not yet been able to detect any essential character in the markings; it is, however, a decidedly *smaller* and *darker* insect, and the costa of the anterior wings is a little more bowed. From this circumstance, and the unusual food-plant, I think it better to announce the species as distinct, thereby calling attention more prominently to it, and leaving it to future observers to *decide* on its specific distinctness.

EUDOREA ATOMALIS, Doubleday, n. sp.; taken by Mr. Weaver, in Scotland; expands 8½ lines; it is allied to *E. ambigualis*, but rather smaller and darker. The anterior wings are fuscous, with darker markings, and with some scattered whitish scales towards the base, on the disc,

* Expands 1⅛ inch: the figure is a little magnified.

and forming the hinder white fascia; there are also a few towards the hinder margin; *the cilia are fuscous.* The posterior wings are rather pale fuscous, *thus much darker than the whitish grey posterior wings of E. ambigualis.*

EUDOREA GRACILALIS, Doubleday, n. sp.; taken by Mr. Weaver, in Scotland; expands 9—10 lines; not very nearly allied to any of our known species: the anterior wings have a peculiarly delicate appearance; they are very narrow at the base, gradually widening to a little before the apex; the hinder fascia runs obliquely inwards from the costa, as in *E. lineolea;* before the hinder margin are several black spots; cilia pale fuscous, with paler patches; the posterior wings are pale greyish-fuscous, with paler cilia.

CRAMBUS CASSENTINIELLUS, Mann; a single specimen of this species, from the collection of Mr. Hemmings, was exhibited at the October meeting of the Entomological Society; it was taken on the downs near Brighton, a few years back.

The species is very closely allied to *C. rorellus,* and like it is at once distinguished from *C. chrysonuchellus by the greater length of the palpi;* the *brighter* markings of the anterior wings also readily distinguish it from *C. chrysonuchellus.* The species is described by Zeller in the Ent. Zeitung, 1849, page 312.

RETINIA RESINELLA, Linn.; bred freely from larvæ collected in Perthshire last summer, by Mr. Bouchard. The larva feeds in autumn and spring, in the resinous exudations which it causes on the twigs of *Pinus sylvestris.* The perfect insect is allied to *R. pinivorana,* but the anterior wings are darker, without the reddish tinge of *pinivorana,* and considerably broader.

GELECHIA VISCARIELLA, Logan, n. sp.; bred by Mr. Logan from larvæ, feeding in April and May, on the shoots of *Lychnis viscaria;* it is closely allied to *G. fra-*

ternella, but the anterior wings are much darker, being dark fuscous, not reddish-brown, and the opposite spots are whiter and narrower.

Alis anticis *saturate fuscis*, maculis tribus obscure saturatioribus, maculis posticis oppositis albidis *tenuibus*. Exp. al. 5 lin.

Head dark purplish-fuscous. Face dull whitish. Palpi internally whitish, second joint beneath *dark fuscous*; terminal joint dark fuscous, with the tip whitish. Anterior wings dark fuscous, with a very faint purple tinge, with three obscure darker spots longitudinally on the disc, and with a few scattered pale scales; beyond the middle are two opposite, *narrow*, *pointed whitish* spots, almost forming a slightly angulated fascia; the apex of the wing is dark purplish fuscous, with paler cilia. Posterior wings pale grey, with greyish fuscous cilia.

YPSOLOPHUS JUNIPERELLUS, Lin.; the *true Juniperellus* is at length a British species, having been bred by Mr. Edwin Shepherd, from larvæ collected on the juniper, in Scotland, Mr. Bouchard. The larva forms webs on the twigs of the *juniper*, just as that of *marginellus* does. (Ins. Brit. 145; Ent. Com. 57.) The anterior wings show considerable resemblance to *Gelechia Galbanella*, from which the long tuft of the second joint of the palpi instantly distinguishes it.

Alis anticis fusescenti-griseis, punctis quatuor saturate fuscis, nebula fusca pone medium, fascia postica fere recta dilutiore. Exp. al. $8\frac{1}{2}$—9 lin.

Head and face grey. Palpi internally grey, tuft of the second joint beneath and externally dark fuscous; terminal joint grey, the extreme tip a little darker. Anterior wings grey, slightly suffused with fuscous, with four dark fuscous spots, one near the base above the fold, one on the fold before the middle, one on the disc in the middle, and one on the disc beyond the middle; this last is placed at the commencement of a fuscous fascia-form cloud, beyond which is a pale, nearly straight, serrated fascia; the apical portion of the wing is suffused with fuscous, with a series of dark fuscous spots on the margins; cilia pale grey. Posterior wings pale greyish-fuscous, with paler cilia.

RÖSLERSTAMMIA PRONUBELLA, W.V.; a single specimen of this very conspicuous species was taken at Sutherlandshire, in May last, by Mr. Buxton; its capture is recorded in the Zoologist, page 4437. The insect is very rare on the Continent; and though known to the authors of the Wiener Verzeichniss, and Fabricius who mis-spells it *promulella*, it had been quite lost sight of by later authors (unless we except Hübner, whose figure, it is most charitable to suppose, was made from a description, form and colour both being so excessively faulty), till lately it has been noticed by Herrich-Schäffer and Reutti. The extraordinary way in which some species seem entirely to disappear, and then, after a lapse of many years, simultaneously turn up in many distant localities, is one of the great marvels of Entomology.

Alis anticis viridi-aureis, costa ipsa in medio dilute lutea; *alis posticis dilute luteis griseo-fimbriatis.* Exp. al. 6½ lin.

Head dark yellow, in front deep purple. Face and palpi pale yellow. Antennæ dark fuscous, a short space before the apex white. Anterior wings shining golden green, darkest towards the base near the costa; the costa, from a little before the middle to beyond the middle, is pale yellowish; cilia pale greyish bronze. *Posterior wings pale yellowish, with all the margins rather dark fuscous,* darkest towards the apex; cilia pale grey. Posterior legs pale yellowish white.

COLEOPHORA LIMOSIPENNELLA, F. v. R.; bred this summer from "elm leaves, picked at Sutton, with the *large Coleophora* of the elm (*limosipennella?*)" (Ent. Comp. 127); and also from similar larvæ on alder, thus noticed in Ent. Comp. 133: "Aug. 23rd, T. B. sent me two *Coleophora* larvæ from alder, the cases similar to those of *C. limosipennella?*" In July, 1854, I collected the larvæ very plentifully on elms, near the Bee-hive at Burford Bridge. The species in the perfect state closely resembles *C. badiipennella,* but is larger and darker, and the whitish

apex of the antennæ is generally unannulated. The case of the larva is *very different*.

Alis anticis *saturate brunneo*-ochreis, costa anguste albida, postice ochrea; antennis albis, fusco-annulatis, articulo basali ochreo, non penicillato. Exp. al. 5—6 lin.

Head, face and palpi pale ochreous. Antennæ white, annulated with fuscous; the basal joint pale ochreous, hardly as robust as in *badiipennella*; the extreme apex is frequently entirely whitish, without annulations. Anterior wings *dark brownish*-ochreous, the costa narrowly whitish to beyond the middle (*yet more broadly* and *less sharply margined* than in *badiipennella*); cilia ochreous, inclining to fuscous towards the anal angle. Posterior wings greyish fuscous, cilia rather darker.

GONIODOMA AUROGUTTELLA, F. v. R. (See frontispiece, fig. 4.) A single specimen was taken by Mr. S. Stevens, in the Isle of Wight, last August, on the banks of the Yar, near Yarmouth, by sweeping the herbage. The larva (figured in Fischer) feeds in an angulated case on the seeds of *Atriplex* (its case resembling in form and colour the rhomboidal perigone of the fruit); in autumn, when the larva is full fed, it attaches its case to the lower part of the stem of the food plant, and boring into the interior, spins a white silken cocoon there, leaving its case attached to the exterior of the stem; it remains unchanged in this cocoon during the winter, but in spring it assumes the pupa state, and the perfect insect appears in July. According to the observations of Fischer and Mann, it frequents only those plants which grow in very sheltered situations.

Alis anticis luteis, strigis duabus argenteis altera costæ, altera plicæ, tertia abbreviata disci, maculis quinque dilute aureis pone medium, atro-squamatis. Exp. al. 4½ lin.

Head, face and palpi whitish. Antennæ white, annulated with black, the tip of the yellowish basal tuft fuscous. Anterior wings yellow, with two silvery streaks from the base to beyond the middle, one along the costa and one along the fold; between these is a shorter streak in the middle of the wing; beyond the middle are five or six pale golden spots,

several of which are margined by black scales; cilia of the costa pale yellow, of the hinder margin fuscous, with a black apical streak. Posterior wings pale grey, with paler cilia.

ELACHISTA POÆ, Douglas, n. sp. The larva is not uncommon in the leaves of *Poa aquatica* in April and August, but is very apt to be ichneumoned. The mined places are very long and narrow, and only slightly discoloured; thus very dissimilar to the broad whitish mines made in the leaves of *Arundo phragmites* by the larva of *E. cerusella*. The first notice that appeared of this insect was in the Zoologist for 1853, at page 4142, in an observation by Mr. Miller "On the habits of *E. cerusella:*" the insect having been mistaken by Mr. Miller for the other sex of *E. cerusella;* a mistake not unnatural, when we consider the simultaneous appearance of the two species in the same localities. Mr. Douglas found the larvæ in Greenwich Marshes in August, 1853, but all the specimens then found were ichneumoned. Last spring it was found at Southend, Greenwich, Hackney, &c., and, no doubt, is generally distributed, though hitherto so completely overlooked.

It is an obscure dingy insect, and has most resemblance to *E. Kilmunella* and *atricomella;* from the former it may be distinguished by the first fascia going obliquely outwards from the costa, and by the posterior position of the dorsal spot; the latter is also the best character to distinguish it from *E. atricomella*, which is a *blacker* insect, without the glossy appearance of *E. Poæ*.

Alis anticis *nitidis fuscis*, pone medium saturatioribus, fascia angulata ante medium, maculis oppositis pone medium (*dorsali posteriori*) albido-luteis, *obsoletis*. Exp. al. 4½ lin.

Head, face, palpi and antennæ fuscous. Anterior wings *shining dingy fuscous*, darker beyond the middle; before the middle is a slightly angulated obscure pale fascia (going obliquely outwards from the costa);

beyond the middle are two yellowish-white opposite spots, *of which that on the inner margin is rather posterior*; both are frequently excessively indistinct; cilia, beyond a dark hinder marginal line, greyish-fuscous. Posterior wings greyish fuscous, with paler cilia.

The female is larger, expanding 5½ lines, and the fascia and spots are more distinct.

ELACHISTA GREGSONI, Stainton, n. sp. Bred by Mr. C. S. Gregson from *black-headed, greenish-grey* larvæ, found in a species of *Poa* near Liverpool last March.

It is closely allied to *E. nigrella*, but the larva is very different, and in the female the two opposite spots are more exactly opposite.

Alis anticis (♂) nigrescentibus, fascia tenui ante medium, maculis oppositis pone medium, apiceque ipso albidis, obsoletis; (♀ alis anticis nigris, basim versus dilutioribus, fascia ante medium fere recta, maculis oppositis distinctissimis, fasciam alteram *rectam* fere formantibus). Exp. al. 3½ lin.

Head greyish fuscous. Face and palpi whitish. Antennæ dark fuscous. Anterior wings blackish, with a slender whitish fascia before the middle; two opposite spots beyond the middle, and the extreme apex whitish; these markings are, however, very indistinct; cilia, beyond a dark hinder marginal line, pale grey. Posterior wings grey, with paler cilia.

The female has the anterior wings black, the basal portion only a little paler: the first fascia nearly straight, and the opposite spots, which are very distinct, almost form another *straight* fascia.

LITHOCOLLETIS VACCINIELLA, Scott, n. sp. The larva was discovered last May by Mr. Scott at Fochabers, Banffshire, and Mr. Weaver in Perthshire, mining the underside of the leaves of *Vaccinium Vitis Idæi*, and the perfect insect was bred the following month. It is a brilliant species, reminding one of *L. pomifoliella* and *L. Lantanella*, but readily recognised by the total absence of any white scales on the inner margin of the anterior wings, between the base and the first dorsal spot.

Alis anticis nitidis croceis, linea tenui basali, costam versus fusco-marginata, strigulis quatuor costæ, tribus dorsi, introrsum fusco-marginatis, albis nitidis, striola apicis elongata, atra; *squamis albis dorsi prope basim nullis.* Exp. al. 4 lin.

Head dark tawny. Face and palpi white. Antennæ fuscous. Anterior wings bright saffron-yellow, with a narrow shining white basal streak, dark margined towards the costa, and with four short costal streaks, and three dorsal streaks shining white, internally dark margined; *between the first dorsal streak and the base of the wing the usual white scales on the inner margin are totally wanting;* in the apex is an elongate black spot, round which runs the dark hinder marginal line; cilia whitish. Posterior wings grey, with paler cilia.

LITHOCOLLETIS CAVELLA, Zeller. On the 11th of January, 1853, I bred a specimen from birch leaves collected at West Wickham; and not knowing to which species it should be referred I put it on one side for future investigation. Subsequently showing the specimen to Mr. Wilkinson he recognised it as an insect he was in the habit of taking on the Addington Road fence, and Mr. Douglas took many specimens there last spring. The species is rather conspicuous from its large size, and the first dorsal streak is less obliquely placed than usual, and frequently uniting with the short first costal streak forms an angulated fascia.

Alis anticis croceis, linea basali, *non obscure marginata*, strigulis quatuor breviusculis costæ, tribus longiusculis dorsi, introrsum fusco-marginatis, albis nitidis; prima dorsi ac prima costæ sæpe *fasciam angulatam formantibus;* striola apicis nigra. Exp. al. 4½ lin.

Head saffron yellow. Face and palpi white. Antennæ whitish. Anterior wings saffron yellow, with a shining white basal streak, *with no dark margins*, and with four short white costal streaks, and three longer dorsal streaks, internally dark margined; the first pair not unfrequently unite, and *form an angulated fascia;* above the apical black spot are a few white scales; beyond is the fuscous hinder marginal line; cilia pale ochreous. Posterior wings grey, with paler cilia.

NEPTICULA WEAVERI, Douglas, n. sp.; (see frontispiece, fig. 5); the larva was found by Mr. Weaver,

in Perthshire, last May, mining in the leaves of *Vaccinium Vitis-Idæi*, and *puckering* them, having a similar habit to *N. Septembrella*, and forming its cocoon within the leaf. Unfortunately many of the larvæ found were ichneumoned, and very few of the perfect insect were bred; it is a large conspicuous species, and may be readily known by the abbreviated broad oblique whitish fascia, from the costa before the middle, and the small whitish spot at the anal angle of the dark purplish black anterior wings.

Alis anticis saturate purpureo-nigris, fascia obliqua abbreviata ante medium, macula parva anali lutco-albis. Exp. al. 3½ lin.

Head and face ferruginous. Antennæ fuscous, the basal joint yellowish. Anterior wings dark purplish black; on the costa, before the middle, is an oblique broad pale yellowish spot reaching to the fold; on the inner margin at the anal angle is a smaller yellowish-white spot; cilia whitish. Posterior wings grey, with pale grey cilia.

NEPTICULA PRUNETORUM, Stainton, n. sp.; bred by Mr. Boyd, from *green* larvæ mining in sloe leaves, *making contorted visceriform mines, like N. viscerella.* Mr. Boyd found the larvæ near Loudwater, Bucks, in September, but only in one locality. The species to which it is most nearly allied are *N. plagicolella* and *Acetosæ;* from the former it is distinguished by the pale *bronzy* basal half of the anterior wings and the *black* head, from *Acetosæ* it is distinguished readily by the extreme brightness of the anterior wings, by the silvery fascia being *rather further from* the *apex*, and bordered internally by a *well-defined* black fascia.

Alis anticis dilute æneis, basim versus purpureo-tinctis, fascia media nigra, fascia postica argentea; capillis atris. Exp. al. 2 lin.

Head and face deep black. Antennæ black, basal joint white. Anterior wings with the basal half pale bronzy, at the extreme base with a purple tinge; in the middle is a well defined black fascia, followed by a straight moderately broad silvery fascia; the entire apex of the wing black; cilia blackish. Posterior wings pale grey, with dark grey cilia.

OBSERVATIONS ON BRITISH TINEINA.

(Supplementary to the Insecta Britannica—Lepidoptera, Tineina; and the Entomologist's Companion; 2nd Edition.)

Ochsenheimeria Birdella, I. B., p. 22. A description of the larva, and its mode of feeding, is given by Scott in last June's Zoologist, at page 4336; at the end of April I again observed the larva crawling on the tops of grass, probably when in the act of moving from a plant it had eaten to a fresh one.

Tinea arcuatella, I. B., p. 29. Mr. Cooper found the larvæ in fungi on birch trees, near Rannoch, in July; hence the species is double-brooded.

Tinea ochraceella, I. B., p. 37. Mr. Wailes visited Rannoch, and obtained some eggs of this species, which he left in Mr. Logan's care to rear in an ant's nest at Duddingstone. "Mr. Logan has reared the eggs, and finds the larvæ feed on the straws, leaves of pine, &c., of which the ants make their nests, so that they are true *Tineæ* in their habits."

Lampronia quadripunctella, I. B., p. 38. In May last, Mr. Logan wrote me—"I have to-day reared *L. quadripunctella* from wild rose; its larva is very similar to that of *L. Rubiella*, but not quite so red, being *rather* paler and browner."

Lamprosetia Verhuellella, I. B., p. 39. The larva feeds

in a case, on *Asplenium trichomanes* and *ruta-muraria*. Mr. Allis has a fine specimen found near York, in a room which opened into a fernery.

Incurvaria tenuicornis, I. B., p. 41. The specimens here described were both females; Mr. Tompkins has since met with a male, of which the antennæ are simple, only slightly pubescent. Mr. S. Stevens took a specimen at West Wickham Wood last June.

Micropteryx Calthella, I. B., p. 42. On the 13th of April, I bred this in a tin in which there were only a piece of decayed wood, a plant of *Dactylis*, and *a plant of Carex*. "Coming events cast their shadows before."

M. Salopiella, I. B., p. 44. A few specimens have occurred at West Wickham Wood.

Hyponomeuta plumbellus, I. B., p. 60. The larva, when very young, in the middle of April, eats the pith of the young shoots of the spindle, causing them to droop. It afterwards quits this retreat and feeds on the leaves.

Prays Curtisellus, I. B., p. 64, and E. C. 55 and 137. The idea here thrown out has been confirmed, the small leaf miners of the ash quit the leaves previous to their fall, and penetrate the young buds, where they feed on the inner bark during the winter, betraying their presence by holes in the outer bark, and "frass."

Depressaria nanatella, I. B., p. 86. The larva, discovered by Mr. Wing last April, mines the upper side of the young leaves of *Carlina vulgaris*, frequently seven or eight occurring on one plant; we found it on the steep ascent of Box Hill; I also noticed it near Torquay.

D. subpropinquella, I. B., p. 88. Mr. Wing found the larvæ, near Norwich, feeding indifferently on *Cirsium* and *Centaurea*; the specimens bred were all referable to *this species*.

D. Douglasella, I. B., p. 97. Mr. Boyd bred a single

specimen from a larva found on one of the *Umbelliferæ*, at Headley Lane, in June.

D. nervosa, I. B., p. 99. I found the splendid larva of this feeding on *Œnanthe crocata* last May, near Dawlish; Dr. Colquhoun bred it from pupæ found in the stems of the same plant, near Ardrossan.

Gelechia cuneatella, I. B., p. 110. Mr. Boyd bred two specimens of this species from larvæ found on willow, June 22nd, then nearly full fed.

G. desertella, I. B., p. 113; and *G. mundella*, I. B., p. 115. Mr. Gregson has bred both these from moss on the sandhills, but had not observed the larvæ. This hint, however, may be of assistance to others.

G. affinis, I. B., p. 115. The larva feeds on moss on a wall in my neighbourhood, from December to March.

G. domestica, I. B., p. 117. I found the larvæ of this feeding on moss, in company with *G. affinis*, at the end of March; previously the larva had not been distinguished from that of *G. affinis*, so that I know not how soon it begins to feed.

G. vulgella, I. B., p. 119. The larva feeds between united hawthorn leaves at the end of April, eating them half through, and so discolouring them.

G. luculella, I. B., p. 119. Mr. Wing found the pale greenish, black-spotted larva of this species on the 12th of February,* feeding in the decayed wood of a prostrate tree

* [This was a chilly, damp day, and it was whilst seeking for this larva that Mr. Wing contracted a cold, which suddenly brought the disease (diabetes), which must long have been lurking in his system, to a crisis. Fortunately for our science, that crisis did not prove immediately fatal, for the plates to the Insecta Britannica—Lepidoptera, Tineina, were not then put on the stone; it was, however, several weeks before Mr. Wing recovered sufficient strength to resume his occupations, but during the summer he succeeded in putting "the heads" on

in Hyde Park. This abnormal habit for a *Gelechia* larva resembling rather that of an *Œcophora* larva, is extremely interesting.

Gelechia solutella, I. B., p. 121. Several specimens have been taken by Mr. Bouchard, in Scotland, this summer, and are in Mr. E. Shepherd's collection.

G. tenebrella, I. B., p. 131. Mr. Gregson also bred this from moss, but without having observed the larva.

G. atrella, I. B., p. 134. Mr. Hogan bred this from *Anthyllis vulneraria*, and describes the larva as "pale blackish brown, without markings of any kind."

Parasia Metzneriella, I. B., p. 141. The fat whitish larva below the seeds of *Centaurea nigra*, found November 13th, 1853 (E. C. p. 140), has produced this species; it is not at all uncommon at Headley Lane.

Nothris Durdhamella, I. B., p. 148. From a letter I have received from Dr. Herrich-Schäffer, it appears that this *is* identical with *Ypsolophus Schmidtiellus*, of which "the larva feeds in May on *Origanum vulgare*, where it betrays itself by the curved leaves; on any alarm it hastily retreats to the earth."

Œcophora grandis, I. B., p. 159. Mr. Edleston has received several specimens of this insect from North Wales, and has distributed it in many collections.

the stones,—obtaining the ready co-operation of Mr. Tuffen West, who relieved him of a considerable portion of the labour by doing "the denuded wings." The two last plates of perfect insects and of larvæ were entirely done by my late talented friend, and he lived to hear the high encomiums passed on those plates by Professor Zeller, than whom probably no one was more competent fully to appreciate their value. Mr. Wing contributed the two Micro-Lepidopterous figures to the frontispiece of this annual, being assisted in the remainder of that plate by his father; but his sand was then nearly run, and early in the new year he was completely laid up: he died on the 9th of January, in the 28th year of his age. "So wise, so young, they say do ne'er live long."]

Perittia obscurepunctella, I. B., p. 178. This species was bred from the "larva discovered by Mr. Wing, making blotches in the leaves of honeysuckle in July, quitting the leaf when full fed, and changing to a singularly flat pupa," mentioned in the Ent. Comp. at page 63.

Cedestis Gysselinella, I. B., p. 190. A few more specimens of this insect have occurred in Scotland this summer.

Gracilaria phasianipennella, I. B., p. 199, and *G. quadruplella*, p. 200. Mr. Boyd found the larva of this insect in cones on the leaves of *Rumex acetosella*, from which he bred both the typical insect and the variety. Professor Zeller also found the larva on *Rumex obtusifolius*, and bred the typical insect. There is, therefore, no longer room to doubt that this is the species Hübner represented feeding on dock, and that Réaumur found feeding on sorrel.

Coleophora albicosta, I. B., p. 214. The larva has been found by Mr. Scott and by Mr. Law; it feeds on the *Ulex*, the case is attached to the stem when full fed, and much resembles an unexpanded bud; it appears to be made of the calyx of the plant.

Bedellia somnulentella, I. B., p. 226. It is very singular, but during the two last seasons this insect seems to have entirely disappeared, though so plentiful in 1852.

Laverna atra, I. B., p. 239. In August last, Mr. E. Brown wrote to me as follows—"I have bred the dark varieties of *L. atra* from apple shoots; this is a most destructive little wretch in apple grounds, owing to the fact of its mining in the bud, and in the alburnum of the *bearing spur* of the apple; it may be found in this situation during the winter. In early spring sickly-looking buds should be pulled off, in order to destroy this pest of the orchard." In confirmation of the idea that the dark variety may be a distinct species Mr. Brown adds—"Among the many scores

that I caught and bred from these trees, I never saw a light variety."

As the newspapers would say, *this information is important.*

Chrysoclista Schrankella, I. B., p. 242. Mr. Scott again found the larvæ near Renfrew, and also at Fochabers, Banffshire. Among the specimens bred two have occurred of a dark variety, in which the entire central orange patch is replaced by black (only a few orange scales being perceptible towards the inner margin, near the base, and immediately before the last costal white spot); this variety is therefore parallel to that of *C. Linneella*, and at first sight appears like a totally distinct species.

Chrysocorys festaliella, I. B., p. 248. Mr. Logan informed me last spring that Mr. Hardy had reared this from raspberry leaves.

Elachista Treitschkiella, I. B., p. 250; bred last summer by Mr. Boyd, Mr. Douglas and myself, from the dogwood miners mentioned in the Ent. Comp., p. 53, under *Lampronia* and *Incurvaria*. The larva may be found from July to October, and is common at Lewisham and Mickleham.

E. Gleichenella, I. B., p. 251. I found the larva of this in a grass and in a *Carex* near Beckenham in March and April; it makes rather small whitish blotches on the upper side of the leaf, and moves from one leaf to another; the pupa is unusually short.

E. albifrontella, I. B., p. 252. I found the larva feeding in the upper part of the leaves of *Holcus mollis* last April.

E. Kilmunella, I. B., p. 253. Bred last July from larvæ found by Mr. Scott in a species of *Carex*, near Fochabers, Banffshire. I am inclined to think that *E. Alpinella*, I. B., p. 254, is only a form of this species.

E. cinereopunctella, I. B., p. 254. The beautiful red-spotted larva mines down the leaves of *Carex glauca* in

spring, having apparently wintered in the withered tip of the leaf; it is full fed in March, and almost immediately it quits the mine it fixes itself in the angle of the leaf, and changes to pupa; thus, by looking at the base of the leaves which have been mined, the pupa may be readily collected. It frequents those plants which grow in the shelter of bushes: those among the junipers at Sanderstead Downs are very prolific in this species.

E. consortella, I. B., p. 256. I have met with this in Headley Lane in July.

E. pulchella, I. B., p. 256, *proves to be* the female of *E. obscurella*, I. B., p. 257. Mr. Edleston's observations, he having taken it, in company with both broods of *obscurella*, show this; and last July I bred both insects from the same larvæ from *Holcus* and other grasses.

E. zonariella, I. B., p. 257. Last August I bred several of this from larvæ in *Aira cæspitosa* sent me by Mr. Scott.

E. gangabella, I. B., p. 258. Bred very freely last summer by Mr. Douglas and myself from larvæ we found in *Dactylis glomerata* near Beekenham. The larvæ commence feeding in the autumn, and make long puckered mines (*Lithocolletiform*) in the grass leaves; they pass the winter without eating, inside the withered leaves, but in March they again make fresh mines, and move readily from leaf to leaf; they are full fed about the middle of April. We found a *few* in *Holcus mollis*. The insect seems very local, as, though so plentiful where we found them, it was only for an extent of about 100 yards; and, though *Dactylis* abounded on both sides of this restricted locality, we found none of this insect.

E. Rhynchosporella, I. B. p. 259. I bred this last June from larvæ found mining down from the tops of the leaves of *Eleocharis*, on Haldon, near Dawlish, last May.

Elachista biatomella, I. B., p. 260. Mr. Wing and I found the larvæ making whitish blotches in the leaves of a *Carex* on the steep side of Box Hill last April. We several times found the pupa placed in the angle of a lower leaf than that which had been mined.

E. triseriatella, I. B., p. 261. No longer unique, a specimen having been taken by Mr. Hogan, at Howth, Ireland, last summer.

E. rufocinerea, I. B., p. 262. In February and March this larva is abundant in the leaves of those plants of *Holcus mollis* which grow under hedges, and on the sides of ditches; it makes broad whitish mines, in which there is very little excrement; it is excessively subject to the attacks of ichneumons.

E. cygnipennella, I. B., p. 262. In the Entomologische Zeitung for 1853, page 415, Zeller describes a species closely allied to this, which he names *E. festucicolella*, having found it in a dry place among *Festuca ovina*, and he mentions that I had informed him it also occurred in England. I alluded to two small specimens taken by Mr. Douglas at Cheltenham, in July, 1853, which I thought distinct from *cygnipennella*, but I am now desirous to suspend my opinion till further observations have been made. When at Dawlish last May I collected an *Elachista* in great numbers, which was evidently attached to the *Festuca duriuscula* growing on the sandy banks; the perfect insect was always sitting on the stems of that grass, and I observed leaves of the grass which had been mined by an *Elachista* larva. I concluded, of course, this would be *E. festucicolella*, and laid in a supply for all my correspondents, but unfortunately have hitherto been quite unable to detect any character by which my specimens can be distinguished from *E. cygnipennella*.

Tischeria complanella, I. B., p. 264. Mr. Wing bred

this last spring from the large white blotches of the oak leaves.

Lithocolletis irradiella, I. B., p. 269. Mr. Wing bred a specimen last spring, from oak leaves collected near Beckenham the preceding autumn. Mr. Shield has also a specimen taken near Dublin "May the 7th, in a mixed hedge."

L. Stettinensis, I. B., p. 279. The larva was observed in great plenty this autumn, in some alders growing in the meadows between Sydenham and Beckenham. The insect is very partial to *the terminal leaf* of each twig, frequently four or five larvæ being in one leaf.

Phyllocnistis suffusella and *saligna*, I. B., p. 285. Mr. Atkinson met with the larvæ of both species near Castle Rising, in Norfolk, early last September.

Nepticula trimaculella, I. B., p. 301. The greenish-grey larva mines in the leaves of several species of poplar (*P. nigra, pyramidalis*, &c.), forming a long gallery. The cocoon is dark brown.

N. ignobilella, I. B., p. 303. The larva forms blotch-formed mines near the edge of the leaf; the excrement is entirely black.

N. Acetosæ, I. B., p. 303. I bred several specimens in August, from larvæ collected by Mr. Shield last July. I also bred a few specimens from larvæ collected by Mr. Wing in the Isle of Wight, early in September. Being, therefore, better acquainted with the species, I give an improved description—

Head *fuscous*, sometimes with a few ochreous hairs. Antennæ dark fuscous, basal joint whitish. Anterior wings *rather dull* bronzy-fuscous, beyond the middle with a dull violent fascia, followed by a rather curved silvery white fascia, which is slightly concave towards the base; the apex of the wing and cilia are dull violet fuscous. Posterior wings pale grey, with pale grey cilia.

Nepticula angulifasciella, I. B., p. 304. The larva here mentioned has now produced this insect; it is, however, extremely difficult to rear.

The insect taken by Mr. Boyd (I. B., p. 306, note) has been described by Boheman as NEPTICULA *quadrimaculella*, from specimens taken in the South of Sweden among nut-bushes.

Answers to ENIGMAS in the ENTOMOLOGIST'S COMPANION.

In the pursuit of scientific truth, intermediate between what we do know, and what we do not know, there is always a certain extent of debateable ground, where the unknown is dimly perceived, or obscurely shadowed forth. That which is thus doubtfully visible speedily becomes clear, if the collective attention of observers be called to the subject; but it is frequently difficult to do this, because, from the very fact of our ignorance, we know not where to record what we thus dimly see, yet, as we must place it somewhere, we run the risk of putting it in the wrong place. For this reason, in my volume of the Insecta Britannica, I abstained from mentioning many larvæ known to me, because the perfect insects, not having been bred, where was I to mention them? In the Entomologist's Companion, however, a work of less pretension, I endeavoured to publish *every scrap of information* I possessed; consequently many larvæ are there recorded of which the perfect insects were then unknown to me. These, to a reader of that book, appear as enigmas; many of these I can now answer, but some yet remain unsolved. The references to the Entomologist's Companion are to the second edition.

E. C., p. 53. "A larva mining the leaves of the dog-wood," is that of *Elachista Treitschkiella*; see ante, p. 78.

E. C., p. 59. "A singular polyphagous mining larva, perhaps not LEPIDOPTEROUS," is COLEOPTEROUS, being that of *Ramphus pulicarius*.

E. C., p. 63. "A larva making brown blotches in the leaves of honeysuckle, in July," produced *Perittia obscurepunctella*; see ante, p. 77.

E. C., p. 65. "A larva found last November, in grass, near Beckenham, which mined the grass, not like an *Ela-*

chista, but like a *Lithocolletis*," produeed *Elachista gangabella*; see ante, p. 79.

E. C., p. 114. "Larvæ mining the leaves of *Atriplex portulacoides?*" should be referred to *Gelechia instabilella*.

E. C., p. 115. "*Elachista*, larva No. 1." This is the young of the larva of *E. atricomella*.

"*Elachista*, larvæ No. 2." These were the larvæ of *E. rufocinerea*.

E. C., p. 127. "Leaves of *Clematis vitalba* had been mined, either by a Dipterous or a *Nepticula* larva." Mr. Winter found this larva last summer; it is DIPTEROUS.

E. C., p. 132. "A new *Elachista* larva (No. 17, in *Sparganium?*)" The plant should have been named *Poa aquatica*; the larva was that of *E. Poæ*; see ante, p. 69.

E. C., p. 137. "Larvæ of an *Eupithecia?* on yarrow," produced *E. subfulvata*.

"A gallery mine of the sloe, with a green" *Nepticula* "larva." This was the larva of *N. prunetorum*.

"An aspen leaf, in which was a pale *Nep.* larva," produced *N. trimaculella*.

E. C., p. 139. "A *Nep.* larva from *Salix alba*, apparently distinct from that of the sallow," produeed, however, only *N. Salicis*.

E. C., p. 140. "A fat whitish larva, below the seeds of *Centaurea nigra*," produced not *Parasia Neuropterella*, but *P. Metznericlla*.

The following ENIGMAS in the ENTOMOLOGIST'S COMPANION still remain unanswered, though it is hoped the solution of them will not be long delayed.

1. E. C., p. 63. "A larva mining, in September and October, the leaves of the *Circæa lutetiana*."

2. E. C., p. 63. "A small mining larva, making dark brown blotches in the leaves of *Origanum vulgare*."

3. E. C., p. 117. "A *Coleophora* larva, feeding on a smooth grass." I found many of this larva on Box Hill last April; they make very conspicuous white mines in the grass. I did not succeed in rearing any, so am not yet certain whether it be *C. Lixella* as suspected.

4. E. C., p. 129. "The clumsy-tailor larva (which takes for its case an entire leaf of hawthorn);" none have yet been reared; the larva was very common on hawthorn last July.

5. E. C., p. 135. "*Nepticula* larvæ, in leaves of *Potentilla fragariastrum*," has again been found, but none have even gone into coccon.

6. E. C., p. 135. "*Gelechia?* larvæ, folding up the leaves of *Lathyrus pratensis*, and (p. 138) *Vicia Sepium*." None of these were reared.

7. E. C., p. 136. "A *Gelechia?* larva on oak, forming an entire leaf into a *vaulted chamber*." None were reared; one larva lived through the winter.

8. E. C., p. 138. "On apple, a new *Nep.* larva, greenish, with dark-green dorsal line, mining a gallery." None reared, and the larva has again been found rather common in hawthorn leaves; it *may* belong to *N. gratiosella*.

9. E. C., p. 139. "A *Nep.* larva, near the midrib of beech leaves; *basicolella*;" none of these went into pupa; the larva has again been found this autumn.

10. E. C., p. 140. "*Scitelliform* mines on the birch;" a

Nepticula larva, making brown blotches in birch leaves, occurring at Dartford Heath, Micklcham, &c.; none have hitherto been reared.

The following incomplete observations, made during the year 1854, may be considered as so many additional ENIGMAS.

11. An *Elachista* larva, found by Mr. Scott at the end of April, mining in leaves of *Scirpus lacustris*.

12. A *Gelechia* larva, found by Mr. Scott early in May, mining the leaves of *Arctostaphylos Uva-ursi?*

13. A black and white larva, not unlike that of *Gelechia rufescens*, found by Mr. E. Shepherd, near Dartford, last July, by sweeping; unfortunately it soon died, without our discovering on what plant it had fed.

14. A larva found by Mr. Harding, last July, feeding in the stems and roots of *Eryngium maritimum*.

15. A larva found by Mr. Scott, in the berries of the mountain ash; the larva when full fed quits the berry, and forms an open net-work cocoon, within which it forms a close white cocoon.

16. A *Nepticula* larva, found by Mr. Scott, making blotches in the leaves of *Lotus corniculatus*.

17. A *Nepticula* larva, in alder leaves, found near Beckenham by Mr. Douglas and myself, and near Darlington by Mr. Law; the larva resembles that of *N. microtheriella*, the cocoon that of *N. Salicis*.

HYMENOPTERA.

By Frederick Smith.

Notes on the New Species of British Aculeate Hymenoptera.

Since the publication of Mr. Kirby's Monographia Apum Angliæ, fifty-eight new species of Bees have been discovered in this country; several of these have long been known in different parts of Europe, and the descriptions of others lie scattered in various publications. It has been thought desirable to bring together a list of the Bees unknown at the time of publication of Kirby's Work, pointing out the place of their description, the localities known for the species, and adding, at the same time, such observations as appear to be necessary.

In 1836, Shuckard did for the British Fossorial Hymenoptera what Kirby had previously done for the British Bees, and, in his Essay on the Indigenous Fossorial Hymenoptera, described all the British species then known; this Essay enjoys a world-wide fame, and since its publication little has been added to our knowledge of the Fossorial division of the *Aculeata;* yet I have here mentioned the few new species which have occurred, with the view of bringing as it were into one focus, the full amount of united labour on the Aculeate group.

The *Formicidæ* have hitherto been much neglected in this country, and we are only beginning to acquire a knowledge of our riches in number of species. The Stephensian Cata-

logue indicates new genera in this family, and several species enumerated in that list prove not to be British; a revision of the list is therefore highly desirable. The difficulties attending the study of the *Formicidæ* have been removed by the publication of Dr. Nylander's Monograph; the accuracy and acumen exhibited in this work will be acknowledged and appreciated by every lover of the science, who will see, in the lucid elaboration of the species, a master-hand, whose work commands our admiration.

In Stephens's Systematic Catalogue of British Insects many new species are enumerated, which, not having been subsequently described by the author, must have excited much speculation in the minds of Hymenopterists as to which species they may possibly represent; in some genera, the number of new species exceeds the total number at present known. Having the means of clearing up, in a great degree, the difficulties presented by this list, I have added some notes in elucidation of it.

NEW BRITISH BEES DISCOVERED SINCE THE PUBLICATION OF KIRBY'S MONOGRAPHIA.

FAMILY ANDRENIDÆ.

Genus COLLETES.

1. *Colletes marginata*, Smith (Zoologist, iv. 1277). This species is found at Little Hampton, Sussex. I know of no other locality.

Genus PROSOPIS.

2. *Prosopis cornutus*, Smith (Zoologist, vi. 2204). This species was in the collection of Mr. Kirby, but without a name: I discovered the male some years ago at Hawley, Hants; it was described as a distinct species, *P. plantaris*, but having bred the sexes from dock stems, the oldest name is retained.

3. *Prosopis punctulatissimus*, Smith (Zoologist, vi. 2205). This species has not occurred near London; I have more than once taken it in Kent, near Birch Wood.

4. *Prosopis hyalinatus*, Smith (Zoologist, vi. 2206); very abundant in many localities, particularly so at Sandown Bay, Isle of Wight.

5. *Prosopis varipes*, Smith (Catalogue of Hymenopterous Insects, Part i. p. 21, 12). This species is found in Yorkshire, but I know of no other locality.

Genus SPHECODES.

6. *Sphcodes subquadratus*, Smith (Zoologist, iii. 1014); occurs in the London district, and in other localities.

Genus HALICTUS.

7. *Halictus gramineus*, Smith (Zoologist, vii. App. 58).

I took this species at Hawley, Hants; there are specimens in the British Museum from Devonshire.

8. *Halictus longulus*, Smith (Zoologist, vi. 2104); plentiful in the Isle of Wight, and also found in the London district, but rarely.

9. *Halictus interruptus*, Panzer (Smith, Zoologist, vi. 2167). This species is in the collection of British Insects in the British Museum; it is from Devonshire.

10. *Halictus prasinus*, Smith (Zoologist, vi. 2169); taken by Mr. Dale, at Bournemouth, Wales; I took it also in Yorkshire.

11. *Halictus maculatus*, Smith (Zoologist, vi. 2172); Cove Common, Hants; I have not found it elsewhere.

12. *Halictus zonatus*, Smith (Zoologist, vi. 2171); in the London district, near Bristol and also in Scotland.

Genus ANDRENA.

13. *Andrena frontalis*, Smith (Zoologist, vii. App. 59). Having had an opportunity of seeing Kirby's own interleaved copy of the Monographia, I found this insect described under the name of *Binglcyella*: from information which has lately been given to me, I suspect it to be the male of *A. Cetii*.

14. *A. analis*, Panzer (Smith, Zoologist, v. 1920); not uncommon in the north of England, but not hitherto found in the south.

15. *A. eximia*, Smith (Zoologist, v. 1930). This insect may possibly be an extremely highly-coloured variety of *Rosæ*, but the male taken with it also differs from the males of the latter species in having the mandibles toothed; taken at Hastings, and Pembury, Kent.

A. rubricata, Smith (Zoologist, v. 1666). I think this is very probably synonymous with *A. florea*, Fab., St. Fargeau; it occurs near London, and in plenty at Hawley, Hants, in June.

16. *A. decorata*, Smith (Zoologist, v. 1667); found once

near Bireh Wood, Kent, both sexes; the male I have seen in other collections.

17. *A. ferox*, Smith (Zoologist, v. 1670). This proves to be the male of *A. distincta*; the sexes were discovered by Mr. Walcott, near Bristol.

18. *A. polita*, Smith (Zoologist, v. 1733); a very distinct species, found at Gravesend in June.

19. *A. vitrea*, Smith (Zoologist, v. 1737); a very distinct species, but I do not know the locality; there are several in Mr. Desvignes' Cabinet.

20. *A. longipes*, Smith (Zoologist, v. 1740); not rare in the neighbourhood of London; particularly near Highgate Archway.

21. *A. æstiva*, Smith (Zoologist, v. 1743); generally distributed, frequently mistaken for *A. Gwynana*.

22. *A. fucata*, Smith (Zoologist, v. 1743). This species is found in the north of England; I have taken it in Yorkshire, and received it from Scotland. It is the *A. clypeata*, of Nylander.

23. *A. conjuncta*, Smith (Zoologist, v. 1744). I took this between Highgate and Colney Hatch some years ago; I have not since met with it.

24. *A. Lapponica*, Zett. On comparison with a specimen from Lapland, I find this identical with *A. apicata* Smith (Zoologist, v. 1748).

25. *A. lacinia*, Smith (Zoologist, v. 1751); the locality not known.

26. *A. Aprilina*, Smith (Zoologist, vi. 2211); in the collection of J. C. Dale, Esq.

27. *A. constricta*, Smith (Zoologist, vii. App. 59). A northern species has occurred at Moffat, Scotland; and near Wakefield, Yorkshire.

28. *A. articulata*, Smith (Zoologist, v. 1750). I consider

this to be only a very large specimen of the male of *A. fulvicrus*.

29. *A. similis*, Smith (Zoologist, vii. App. 60); very like the male of *A. albicans*, but distinct; found by Mr. Walcott near Bristol.

30. *A. extricata*, Smith (Zoologist, vii. App. 59); very like *A. fulvicrus*; Weymouth, and also at Southend.

31. *A. Kirbyi*, Curtis (British Entomology, fol. 129); said to be found near Norwich; the type is in the British Museum. I possess specimens from the Morea.

32. *A. argentata*, Smith (Zoologist, v. 1920); found at Weybridge, Sandhurst, and on Parley Heath by Mr. Dale; Dr. Nylander told me the male was the *A. barbatula* of Zetterstedt.

Genus Macropis.

33. *Macropis labiata*, Panzer (Smith, Zoologist, iv. 1279.) Three specimens of the male are all which have hitherto been captured in England; the localities are Leicester, New Forest, and Weybridge. Mr. S. Stevens captured the last in the beginning of July at the latter locality; it no doubt appears about the same time as its congener, *Dasypoda hirtipes*.

Genus Megachile.

34. *Megachile versicolor*, Smith (Zoologist, ii. 697); discovered by Mr. Thwaites, near Bristol. I have taken it at Weybridge, but hitherto it has proved to be very rare; it closely approaches *M. centuncularis*, but the scopa which clothes the abdomen beneath is of two colours, black and fulvous.

35. *M. pyrina*, St. Farg. The male is the *M. rufitarsis*, the female the *M. fasciata* of the Catalogue of British Hymenoptera; it occurs at Weybridge, but rarely.

36. *M. argentata*, Fab. This is identical with *M. Leachella*, of Stephens's Catalogue, which I described in the

Zoologist, ii. 696, as *M. albiventris;* it has been met with at Southend and Weybridge, and at Little Hampton, Sussex.

37. *M. odontura*, Smith (Zoologist, vii. App. 58). I have only seen the unique specimen in the British Museum, taken at Spitchwick, Devon.

Genus Osmia.

38. *Osmia parietina*, Curtis (British Entomology, folio 222). This rare species has been supposed to be identical with the *O. fuciformis*, Latr.; if so, the description of the male will not at all suit the present species; this synonym is therefore very doubtful.

Genus Stelis.

39. *Stelis minuta*, St. Farg. (Smith, Zoologist, iii. 1155); discovered by Mr. Thwaites, near Bristol; I am not aware of it having occurred in any other locality.

40. *S. octomaculata*, Smith (Zoologist, iii. 1155). This little bee was taken at Blackwater, Hants, some years ago; it has not been met with since.

Genus Ammobates.

41. *Ammobates bicolor*, St. Fargeau (Smith, Zoologist, vi. 2212). This bee is in the Museum collection, and is said to have been taken at Leicester.

Genus Nomada.

42. *Nomada lateralis*, Panzer (Smith, Zoologist, ii. 601); found in the London district, plentifully in the neighbourhood of Highgate and Hampstead.

43. *N. baccata*, Smith (Zoologist, ii. 604). This pretty little species was first taken at Sandhurst, and subsequently at Weybridge, in plenty; but it is extremely local.

44. *N. borealis*, Zett. This is the *N. inquilina*, Smith (Zoologist, ii. 605). It is parasitic on *Andrena Clarkella*, and very local and rare: it occurs on Hampstead Heath, and was discovered at Leominster some years ago by Mr. Newman. I have received it from Lapland.

45. *N. signata*, Jurine (Smith, Zoologist, ii. 602); not uncommon some seasons around the Hampstead and Highgate districts.

46. *N. Roberjeotiana*, Panzer (Smith, Zoologist, ii. 603); a very rare species, discovered at Blackwater, Hants; Mr. Dale has also captured it, I believe in Hampshire.

47. *N. rubra*, Smith; described in the Zoologist, vol. vii. App. 41, from the unique specimen in the British Museum, taken at Kingsbridge, Devon, by Dr. Leach.

48. *N. mistura*, Smith (Zoologist, ix. App. 127); taken at Newcastle by Mr. Hewitson; I have since captured a specimen in Yorkshire, and have received it from Scotland.

49. *N. atrata*, Smith (Zoologist, iv. 1568); taken at Arundel by Mr. S. Stevens; it has not occurred elsewhere that I am aware of.

Genus Cœlioxys.

50. *Cœlioxys rufescens*, St. Farg. (Smith, Zoologist, iii. 1152); rare in the London district, but plentiful in Hants, and the Isle of Wight in July.

51. *C. Vectis*, Curtis (British Entomology, folio 349); very plentiful along the Undercliff, Isle of Wight, in July; it has occurred in Hants, and this season at Putney, taken by Mr. Grant.

52. *C. sponsa*, Smith, n. sp. This is probably the male of the next species; both will be described in my work on the British Bees; they were taken in the London district.

53. *C. mandibularis*, Nylander; taken in the same locality as the former.

54. *C. umbrina*, Smith (Zoologist, iii. 1153). This insect occurs in profusion along the Undercliff, Isle of Wight, particularly in Sandown Bay, in July.

Genus Melecta.

55. *Melecta luctuosa*, Scopoli. This is the *true M. punctata*, Fabr., that described in the Monographia being the

M. armata of Panzer; a reference to Panzer's figure shows this to be the case, but it is placed beyond a doubt by Dr. Nylander, who has seen the typical specimen.

Genus CERATINA.

56. *Ceratina albilabris*, Fab. (Smith, Zoologist, vii. App. 57); in the collection of the British Museum, taken in Devonshire by Dr. Leach.

Genus BOMBUS.

57. *Bombus Lapponicus*, Fab. This beautiful species (which I described in the Zoologist, vii. App. 59, as *B. monticola*), was first discovered in Wales, by Mr. Newman; it was next met with on Halifax Moor, Yorkshire, and subsequently in Herefordshire and Monmouthshire, and also in Perthshire, Scotland.

58. *B. Collinus*, Smith (Zoologist, ii. 548); only the male and worker are at present known; the male has occurred at Westow, Yorkshire; near Bristol; on the Brighton Downs, and in Cumberland.

59. *B. Smithianus*, White (Proceedings Linn. Soc. 1851, Ann. and Mag. Nat. Hist. x. New Series, p. 294); the *Bombus arcticus* of Dahlbom, but not of Kirby; this interesting addition to our *Bombi* was made by Mr. A. White, in 1850; he captured it in Shetland; it has not occurred in any other locality.

From the foregoing list, it appears that fifty-nine species of Bees have been added to the British list since 1802; and when we take into consideration that upwards of fifty of the species of the *Monographia* have been united to their partners, thereby reducing the number described as distinct from 221 to 170, it will be seen that a considerable advance has been made in this branch of Entomological science. The present number of species of British Bees will be about the same as Mr. Kirby enumerated, certainly not more than ten

above that number. It is gratifying to see amongst our younger Entomologists several able and industrious students turning their attention to this most interesting order of insects; and although we cannot reasonably expect so large a number to be added to our list of indigenous bees as has been added since Mr. Kirby described them, still many interesting additions are and will be continually made: the remotest parts of the kingdom are by degrees being brought within a day's rail, and we may confidently expect many Swedish and even Lapland species will be added to our Fauna.

The last species in the above list was a grand addition to our Fauna, made by Mr. White, who, had his visit to Shetland been an Entomological one, would no doubt have made other equally interesting additions. On a future occasion we hope to chronicle, not only species, but even genera unknown at present to the British Fauna.

NEW SPECIES OF FOSSORIAL HYMENOPTERA, described or discovered since the publication of SHUCKARD'S ESSAY.

Genus POMPILUS, Fab.

1. *Pompilus acuminatus*, Smith. This species is described in the Catalogue of British Hymenoptera, App. 119. I received it from Moffat, Scotland; there is a specimen in the British Museum, without a locality.

Genus APORUS, Spin.

2. *Aporus bicolor*, Spinola. I captured two specimens of this insect at Southend; that described in Shuckard's Essay is only a variety of *P. pectinipes*, having the second transverse cubital nervure obsolete.

Genus ASTATA, Panzer.

3. *Astata stigma*, Panzer. I captured a female of this

species at Weybridge, in 1845, and described it in the Zoologist, vol. iv. 1157, as *A. jaculata*. I supposed it to be a new species; but on obtaining the sexes of *A. stigma* from France, I find it to be the female of that species; the male has not been met with in England.

Genus TRYPOXYLON, Latr.

4. *Trypoxylon attenuatum*, Smith; described in the Catalogue of British Hymenoptera, App. 120. I received the species from Bristol, where it appears to be abundant.

Genus CERATOPHORUS, Shuckard.

5. *Ceratophorus anthracinus*, Smith; described in the Zoologist, vol. ix. App. 126; this species I received from Devonshire.

Genus CRABRO, Fab.

Crabro interstinctus, Smith; described in the same page as the former; the locality is Weybridge.

Genus VESPA, Linn.

6. *Vespa arborea*, Smith (Zoologist, vii. App. 60). I discovered this species in Yorkshire in 1836. It appears to be a northern insect; it has been taken in Cumberland and Scotland. M. Saussure has met with it near Geneva.

NOTES ON THE MYRMICIDÆ AND FORMICIDÆ.

Family MYRMICIDÆ (*Formica*, pt. Linn.)

1. *Myrmica scabrinodes*, Nylander; very abundant in all parts of England.

2. *M. ruginodis*, Nylander; equally abundant with the former species; this species I believe to be identical with the *M. rubra* of our lists.

3. *M. lævinodis*, Nylander; not so abundant as the preceding; found at Shanklin, Isle of Wight; Weybridge, &c.

4. *M. cæspitum*, Latr.; this name appears in the Sys-

tematic Catalogue, but the insect does not exist in the Stephensian Collection; there it is represented by *M. scabrinodes*, male. This species, which is the *M. fuscula* of Nylander, is very abundant on our coasts; it abounds along the Undercliff, Isle of Wight, and many large colonies exist on the shore below Southend; it is also abundant at Folkstone, &c.

5. *M. simillima*, Smith; this insect was sent to me by Mr. Dale some years ago, captured in Dorsetshire.

Family FORMICIDÆ.

6. *Tapinomia collina*, Förster (Hym. Stud. Form. p. 43, 21). This species was captured by Mr. Dale, at ———. It is a form new to our Fauna—being characterized by having the scale decumbent, the base of the abdomen being produced and overhanging the abdominal scale and peduncle; this is the most obvious point of difference from *Formica*.

NOTES in explanation of the NEW SPECIES OF ACULEATE HYMENOPTERA in STEPHENS'S SYSTEMATIC CATALOGUE.

NO.

4865. *Pompilus nervosus*, Steph., the ♀ of *P. gibbus*, Linn.
4866. *P. cognatus*, Steph., the ♀ of *P. pectinipes*, Linn.
4867. *P. basalis*, the ♂ of *P. gibbus*, Linn.
4868. *P. phæopterus*, Steph., the ♀ of *P. affinis*, Van der Lind.
4869. *P. apicalis*, Steph., the ♂ of *P. niger*, Fab.
4870. *P. aterrima*, Steph., the ♀ of *P. niger* (major), Fab.
4873. *P. argyrostoma*, Steph., the ♂ of *P. plumbeus*, Fab.
4875. *P. nigerrimus*, Steph., the ♀ of *P. petiolatus*, Van der Lind.
4877. *P. subfasciatus*, Steph., the ♀ of *P. hyalinatus*, Fab.
4879. *P. nebulosus*, Steph., the ♀ of *P. exaltatus*, Fab.
4880. *P. zonatus*, Steph., the ♂ of *P. exaltatus* (minor), Fab.
4881. *P. subnebulosus*, Steph., variety of the ♂ of *P. exaltatus*, Fab.
4884. *P. formosus*, Steph., the ♂ of *P. notatus*, Rossi.

No.

4885. *P. notatus*, Steph., the ♀ of *P. cinctellus*, Spin.

4888. *Ceropales calcaratus*, Steph., the ♂ of *P. hyalinatus*, Fab.

4889. *C. punctum*, Steph., the ♂ of *P. petiolatus*, Van der Lind.

4891. *C. nigripes*, Steph., a variety of *C. maculata*, Fab.

4892. *C. rufipes*, Steph., a variety of *C. maculata*, Fab.

4901. *Ammophila pulvillata*, Sowerby, the ♂ of *A. subulosa*, Linn.

4908. *Psen aterrimus*, Steph., the ♀ of *P. atratus*, Panz.

4909. *P. caliginosus*, Steph., the ♀ of *P. atratus*, Panz.

4902. *P. compressicornis*, Steph., the ♂ of *P. atratus*, Panz.

4917. *Arpactus consobrinus*, Steph., the ♂ of *A. tumidus*, Panz.

4911*. *Gorytes quinquefasciatus*, Steph., the ♀ of *G. Fargeii*, Panz.

4912*. *G. quinquecinctus*, Steph., the ♀ of *G. Fargeii*, Panz.

4916*. *Lyrops tricolor*, Steph., the ♂ of *Larra pompiliformis*, Panz.

4917*. *L. bicolor*, Steph., the ♀ of *L. pompiliformis*, Panz.

4926. *Oxybelus tridens*, Steph., the ♀ of *O. uniglumis*, Linn.

4927. *O. bispinosus*, Fab., the ♂ of *O. uniglumis*, Linn.

4931. *Crabro pterotus*, Steph., the ♂ of *C. patellatus*, Panz.

4933. *C. interruptus*, Steph., the ♀ of *C. cribrarius*, Linn.

4934. *C. palmatus*, Steph., the ♂ of *C. cribrarius*, Linn.

4937. *C. subinterruptus*, Steph., the ♀ of *C. Lindenius*, Shuck.

4940. *C. agrestis*, Steph., the ♀ of *C. vagus*, Fab.

4941. *C. divisus*, Steph., the ♂ of *C. vagus*, Fab.

4942. *C. vespiformis*, Steph., the ♂ of *C. Lindenius*, Shuck.

4944. *C. serripes*, Steph., the ♀ of *C. vagus*, Fab.

4945. *C. subterraneus*, Steph., the ♀ of *C. xylurgus*, Shuck.

4949. *C. duodecimguttatus*, Steph., the ♂ of *C. xylurgus*, Shuck.

4951. *C. tarsalis*, Steph., the ♀ of *C. leucostoma*, Linn.

4952. *C. signatus*, Steph., the ♀ of *C. dimidiatus*, Fab.

4953. *C. analis*, Steph., the ♂ of *C. subpunctatus*, Rossi.

4954. *C. consobrinus*, Steph., variety of the ♂ of *C. subpunctatus*, Rossi.

4955. *C. quadrimaculatus*, Fab., a variety of the ♂ of *C. subpunctatus*, Rossi.

4957. *C. aterrimus*, Steph., the ♀ of *C. leucostoma*, Linn.

4959. *C. spiniceps*, Steph., the ♂ of *C. leucostoma*, Linn.

4960. *C. geniculatus*, Steph., the ♀ of *C. scutellatus*.

4962. *C. stigma*, Steph., the ♀ of *C. elongatulus*, Van der Lind.

4963. *C. tibialis*, Steph., the ♂ of *C. podagricus*, Van der Lind.

4964. *C. scutellatus*, Steph., the ♂ of *C. spinipectus*, Shuck.

No.

4965. *Crabro phæopterus*, Steph., the ♀ of *C. scutellatus*.

4967. *C. dimidiatus*, Steph., the ♀ of *Diodontis tristis*, Van der Lind.

4978. *Pemphredon nitida*, Steph., the ♂ of *P. lugubris*, Fab.

4981. *P. fuscipennis*, Steph., the ♀ of *P. lugubris*, Fab.

4983. *P. hyalipennis*, Steph., the *Cemonus lethifer*, Shuck.

4987. *Mellinus bifasciatus*, Steph., the ♂ of *M. arvensis*, Fab.

4988. *M. interruptus*, Steph., a variety of the ♀ of *M. arvensis*, Fab.

4990. *M. pratensis*, Steph., a variety of the ♀ of *M. arvensis*, Fab.

4991. *Cerceris aurita*, Steph., the ♀ of *C. arenaria* (major), Linn.

4992. *C. læta*, Steph., the ♀ of *C. arenaria* (major), Linn.

4994. *C. quinquecincta*, Steph., the ♀ of *C. interrupta*, Panz.

4996. *C. arenicola*, Steph., the ♂ of *C. arenaria*, Linn.

5002. *C. ferox*, Steph., the ♀ of *C. ornata* (major), Fab.

5007. *Odynerus Eumenoides*, Steph., the *O. murarius*, Linn.

5026. *O. triangulus*, Steph., the ♂ of *O. parietina*, Linn.

NOTES

ON

THE COLLECTING AND PRESERVING

OF

COLEOPTERA.

By T. Vernon Wollaston, M.A., F.L.S.

To offer suggestions, to the incipient Colcopterist, of such a general and practical character as shall enable him, whilst in pursuit of his objects, to realize as far as may be possible the old saying (albeit applied to a different subject) of

Delectant domi, *non impediunt foris ;*

or to point out the various localities to which his attention should be turned, and in which his labours are the most certain to be crowned with success, is no easy task; and yet, without some tolerably definite instructions on these heads, much time and many valuable opportunities are apt to be lost. To attempt to indicate, however, the *locus quo* of the numerous families which compose the Coleopterous world would, in a limited space, be absurd, seeing that almost every spot, and combination of circumstances, has its own tale to tell. The collector, indeed, who would turn his researches to the best account, must be on the *qui vive* everywhere. Nevertheless, there are unquestionably certain places and conditions which experience has shown to be *par excellence* adapted to his purpose, and of these we will now speak.

Sandy districts, especially towards the coast, are at all times preferable to clayey ones; but the *intermediate* soils, as for instance the deep black loam of the alluvial countries and of the fens, are perhaps the most productive—and where *woods* can be found in such tracts, the Coleopterist has attained his Paradise. The higher the position above the sea, the later (as a general rule) will be the season for collecting in it; and hence the lower regions (particularly the shore) should be selected in the early spring, whilst the mountains and moorlands are reserved for the autumn. In maritime tracts, where a very large proportion of our rarer species occur, the sweeping-net will be of *comparatively* little use, the insects in such situations being best obtained either from beneath pebbles and rejectamenta in open grassy spots, or else harbouring around the roots and stems of plants amongst sand. In Alpine countries, again, the net may be almost dispensed with, there being seldom vegetation enough in such districts to admit of its action; whilst the species which obtain are for the most part (even more peculiarly so than the littoral ones) attached to the undersides of stones.

It is a mistake to suppose that the progress of agriculture tends to lay waste our Entomological preserves, and to exterminate insect life. In some few instances (as in the destruction of forests) this may be, and probably is, the case; but I am convinced that, in a general way, the very reverse is nearer the truth. The vast superiority of the London district (highly cultivated as it is) over almost every other in England, may be quoted in support of this; and I may add, from personal observation, that I have never met with such marked success as along railway embankments, and on other grounds recently turned-up by the edges of gardens and fields, where the vegetation is rank and redundant. Let not the collector assume, therefore, that he must needs sally to a distance for his game, since he will often reap a richer har-

vest a hundred yards from his own door than by taking a "return ticket" (which involves, moreover, the loss of time) for a hundred miles into the country—perchance into some cold clayey region where his exertions will prove comparatively fruitless.

Let the moss be carefully examined (for the minuter tribes), wherever it can be procured, though more especially from off the trunks of trees. The best plan in the winter months is to shake it over a large bag, the contents of which may be gradually turned out, on a sheet of white paper, at home; and if overhauled in front of a window, nothing will be lost, as those species which escape will almost invariably fly or run to the light, and may be immediately secured from off the glass.

The fungi in woods, and agarics from off the trunks of trees, must never be neglected, as they occasionally teem with life—though more often of the smaller than the larger kind—and where they are observed to be full of a species which is usually rare, it is better to bring away a portion of the substance itself, and leave the remainder for another day, than to *destroy the whole* by endeavouring to procure *in situ* all the specimens which it contains.

Dead animals, partially-dried bones, as well as the skins of moles and other vermin which are ordinarily hung up in fields, are magnificent traps for *Coleoptera;* and if any of these be placed around orchards and enclosures near at home, and be examined every morning, various species of *Nitidulæ, Silphidæ,* and other insects of similar habits, are certain to be enticed and captured.

Planks and chippings of wood may be likewise employed as successful agents in alluring a vast number of species which might otherwise escape our notice, and if these be laid down in grassy places, and carefully inverted every now and then with as little violence as possible, many insects will be found adher-

ing beneath them, especially after dewy nights and in showery weather. Nor must we omit to urge the importance of examining the undersides of stones in the vicinity of ants' nests (though particularly those of the *Formica flava* and *fusca*, in chalky districts), in which positions, during the spring and summer months, many of the rarest of our native *Coleoptera* may be occasionally procured.

The muddy banks of rivers, and the alluvial deposits of marshy grounds, are pre-eminently rich, and must be carefully searched. On warm still days, when the sun is bright, such spots are often alive with the *Bembidiades* and *Staphylinidæ*, which may be brought in still greater numbers to the surface by *treading down* the earth amongst the rushes and coarse grass with which such localities abound; whilst in fenny districts the heaps of sedge which, after being cut, are permitted frequently to remain in such situations, will never fail to afford beneath them a *bonne bouche* for the Coleopterist.

Felled timber (particularly in the woodland countries) should never be overlooked, a host of species occurring beneath bark (especially when in a rotting state) which we shall in vain search for elsewhere; and where wounds in trees (uncut) have caused the sap to exude, and the bark to have become loosened from disease, a passing investigation will seldom fail to reap its reward.

The waters, moreover (both stagnant and running), teem, especially during the autumnal months, with life, from the edges of the mighty river rolling in its pride, to the mere footprints of cattle stamped on the undrained soil. Mountain rills, however, small limestone pools, and deep ditches (in fenny and brackish spots), will best repay examination; whilst the stones and pebbles which are more or less immersed along the margins of streams and lakes present the most promising conditions for the *Philhydrida*.

As for those spots in which the art of *brushing* comes into play but little need be said, the sweeping-net being almost universal in its operation, and consequently attaining its maximum of usefulness wherever vegetation is the most rampant; and this brings us to the second portion of our subject, namely, the consideration of

The *Instrumenta belli* of the Coleopterist.

A sweeping-net is the first thing to be obtained. They are well known to all collectors, and those manufactured by Mr. Downie (usually to be purchased in London) are the best. Not less than two wide-mouthed bottles (with a quill through each cork, and some blotting-paper within for the insects to adhere to) must be taken, in addition to a few tin boxes (or tubes) for the reception of the larger species, and to hold (if required) portions of fungi or larvæ. If it be thought desirable, a laurel leaf may be cut into each bottle, which will kill the inmates in a short time, and *at once* so stupify them as to prevent the possibility of civil war, *inter se;* whilst it will preserve them in a sufficiently relaxed state to be afterwards set out. This, however, should not be entirely trusted to as a means of destruction, and it will be advisable to dip each bottle for a few minutes into boiling water after returning home; for the insects which have been captured late in the day, and which happen to be tenacious of life, will be often so far overpowered as to appear dead; but after being expanded, on this hypothesis, they will be found in a fortnight's time waving their antennæ to and fro over the cards to which they have been carefully and tightly gummed down.

A few quills, closed with small corks, may be put into the waistcoat pocket; for, whilst by no means necessary, it may be sometimes satisfactory to keep captures of an extremely rare nature (should the collector be fortunate enough to meet

with them) apart from the rest; but all "stifling-boxes" (as they are termed by their cockney inventors, and within which *Coleoptera* will live the term of their natural lives) and other such absurdities, although they may serve to amuse children, are worse than useless.

Next, as regards

The *Modus operandi* in mounting *Coleoptera*.

Much might be said—this being perhaps the most important item for our consideration, and one on which the value of our collections in a scientific point of view, apart from their symmetry of arrangement (which has a charm essentially its own), almost exclusively depends.

Imprimis, then, let the collector provide himself with a strong box, about the size of a dressing-case (small enough to be taken charge of *personally* whilst on his travels, and which must not be allowed ever to be treated *as baggage*): a leather cover to strap over it will be found desirable, and will render it easy of carriage when on the move. Let this box contain a gigantic wide-mouthed bottle (to be nearly filled with laurel leaves, cut up and bruised); a smaller one for spirits of wine (which may sometimes be required for the large and dark species, though it is generally better to avoid this mode of preserving them when setting boards are to be had); another, of the same size, for gum (composed of three parts of Tragacanth to one of Arabic, both in powder; to be mixed in water containing a grain of Corrosive Sublimate, without which it will not keep, until of a consistency just thick* enough to run); a small, partitioned box, to hold pins

* It may be well to state that this gum is of an extremely absorbent nature, and that nearly a fortnight is usually required before it can be properly made. The best plan is, to keep adding a little water (and stirring it) every few days until it is of the proper consistency, which should be so thick that the bottle may be almost inverted without its

(two sizes will generally suffice—the larger one for the species which are to be stuck, the smaller for piercing through the cards); scissors, camel's-hair brushes, and a pair of pliers; and, lastly, a drawer fitted up with a dozen or more thin frames of wood—which are packed one over the other; and on to each of which is glued a sheet of cardboard (of similar size), for the insects to be gummed upon *promiscuously*.

It is the best plan to mount *Coleoptera* generally *upon cards*—at any rate all species smaller than (for instance) a *Harpalus*; since in this manner they are not only preserved for a far greater length of time than by the ordinary method (and are, moreover, much less subjected to breakages), but we avoid the corrosion which is so apt to take place upon the pin, and which is liable to accumulate to such an extent as, at last, to destroy the specimen *in toto*. Admitting therefore the advantage of this principle, both in theory and practice, let us make another observation. Those Entomologists who have commenced to adopt this "card-system" (as it may be termed) have usually fallen into error by cutting their cards *first* (no doubt for the sake of symmetry), and then forcing their insects as it were to *fit* them. Now this is obviously a mistake. Uniformity, it is true, is most desirable in a well-arranged collection; but it is certainly not *so* important as that the specimens should be all properly expanded (legs and antennæ to their natural length),—without either drawing them out, or contracting them in (as the case may be) beyond what is right, to suit the respective spaces which we have beforehand allotted to them. It is clearly more consistent *to adapt the card to the insect, than the insect to the card*: and, such being the case, the above-mentioned

running out. A single grain, however, of Corrosive Sublimate is sufficient for a very large quantity; and it is advisable to dissolve this grain in the water which is poured *first* upon the gum.

"frames" (from off which the specimens may be cut at leisure; and at times, as for instance the winter, when we are comparatively unoccupied) are at once applicable,—whilst they enable us to stow into a single, compact drawer upwards of two thousand individuals at least, which, according to the usual plan, would have occupied two or three cumbersome store-boxes for their reception.

The *mode* of setting *Coleoptera* may be briefly described as follows. The insects having been taken out of their bottle, when killed, if you have not time to expand them *whilst fresh*, put them into a minute bag (silk is the best), to be thrown amongst your bruised laurel leaves. They will keep pliant for a long time there, though it is *desirable* not to let them remain in it much beyond a week. When you have leisure to mount a few of them, take a certain number out from the bag; and, having gummed thickly a space on your cardboard equal to, at least, *the entire specimen when expanded*, place the beetle upon it, drag out the limbs with a pin, and, leaving it to dry, go on with the next one that presents itself. As the card has to be cut, afterwards, *around* your insect (so as to suit it), there is no advantage in gumming it precisely *straight upon your frame*,—though it is true that a certain amount of care in this respect lessens your after-labour, of cutting-off, very materially.

When your frame has been filled, and you are desirous of separating the species, cut off the entire cardboard (immediately within the frame) with a penknife, and perform the remainder of your work with finely-pointed scissors. Although at first this process may seem to be tedious, a little practice will soon make perfect; whilst the advantages of the system are so obvious, that, when once adopted, it will assuredly never be relinquished. For several years past I have tested it most rigidly (not only in this country but on the continent also), and have attempted no other mode; and

I am ready to submit the result, as evinced by the state of my collection, to the consideration of anybody who will take the trouble of inspecting it.

Such are a few general hints on the collecting and preserving of *Coleoptera*, compiled exclusively for the use of the beginner. Had spae been unlimited, they might have been multiplied tenfold: but it is hoped that even these, such as they are, will not be found altogether worthless.

T. V. WOLLASTON.

25, THURLOE SQUARE, BROMPTON,
March 9th, 1855.

COLEOPTERA.

BY E. W. JANSON.

In order to obtain a clear starting-point, it has been necessary to notice here all the New British Beetles recorded since the last standard work on the subject; and the number of species being so great, and the space accorded to me so limited, these notices have necessarily been as brief as possible.

At the close however of another season, I hope that the space will allow of my giving *detailed* notices of all the new species occurring in 1855, with descriptions, if possible, so as to make this portion of the work more interesting to the young student.

Taking Mr. Stephens's Manual of British Beetles, published in 1839, and which, however great its imperfections, is the most complete descriptive catalogue of the order which we possess, as my starting-point, I have endeavoured to collect and arrange the species, which have been since given as indigenous to Great Britain.

To this end I carefully scanned the pages of the Entomologist and of the Zoologist, and extracted from the numerous lists and notices of captures all the specific *names* unenumerated by Mr. Stephens. This accomplished, I sought to divide the formidable array of names thus obtained into two distinct categories: firstly, those which represented *species* not contained in the Manual, and secondly, those which were

new *names* only, old friends in novel attire. But here was the rub; and I must frankly admit that had not two kind friends opportunely stepped in at this juncture to my assistance, I should have abandoned my project in despair; for, in the greater number of these lists the contributors had entirely omitted to append an author's name to the specific titles. How far I ultimately succeeded in this division, admitting the first and rejecting the second, I leave my readers, and more especially the authors of the notices aforesaid, to decide. Another difficulty I encountered, chiefly among the *Curculionidæ*, was the occurrence of names registered during the transitional state of the nomenclature, in genera not yet revised, or rather the revision of which has not yet been published, by Mr. Walton, and concerning which I should inevitably have committed several ridiculous blunders had not the cabinets of Messrs. Stevens and Wollaston set me aright. And here I would earnestly appeal to the gentleman, to whom, for the last fifteen years, all engaged in the acquisition and study of British *Coleoptera* have, I believe without exception, hastened to communicate the rarities or novelties with which industry and perseverance, and on which success is invariably the attendant, has rewarded them,—to whom all have silently but anxiously looked for the accomplishment of the promise given nearly twelve years since,* but which, up to the present time, has been so sparingly and intermittently carried out: not that I would utter a single word in depreciation of leisurely investigation, of which there is unfortunately palpably too great a lack in many of the entomological essays of the present day, and in which the characteristic of this precipitate go-ahead age is a predominant feature; but, considering that the eighth of

* Annals and Magazine of Natural History, vol. xiii. p. 81, February, 1844.

a century has well nigh elapsed since the announcement that the nomenclature of nearly all the British species was cleared up, I think that this appeal can scarcely be styled unreasonable, particularly when it is borne in mind, that the consciousness that one was engaged on the subject whose high qualifications have been incontestably proved, whose materials are unequalled in extent, and whose opportunities of arriving at correct results are and must remain unparalleled, has deterred others from paying that attention to the group which they might otherwise have done,—that the collection of the illustrious Schönherr, now gathered to his fathers, having, I believe, become public or rather government property, will never again contribute the types and information which its late possessor, doubtless satisfied that they would be applied to the general weal, the advancement of science, and the elimination and dissemination of truth, lavished on the English reformer,—that the enlightened and amiable Germar, who likewise lent his hearty co-operation, has also passed away, although, happily for our science, his collection has descended to one, who, among the first to point out and rectify the errors of the nomenclature adopted in this country, has ever extended a helping hand to those engaged in perfecting the good work he so ably and impartially commenced, and from whose unbiassed and truth-loving pen the painstaking and conscientious labourer in the entomological vineyard may with confidence look forward to the encouraging word of praise, and the indolent and unscrupulous scribbler as surely await well-merited rebuke, in the invaluable yearly reports instituted by the late Dr. Erichson. I sincerely trust that this appeal will not have been made in vain, that the precious MSS. will be withdrawn from their resting-place, that they will not tarry on the way to Red Lion Court, and that when the bright sun of the yet distant though approaching Spring again calls us from our books and boxes, we

may be enabled to resume our nets with the consciousness that the rows of weevils now standing in our drawers in dismal array unnamed, and with labels reversed, or ("awaiting Walton's Catalogue") consigned to the repository reproachfully yet hopefully endorsed "*Insecta non-determinata*," have at length been definitively arranged, and, wandering perchance with plying arm and watchful eye in search of some rare *Curculio* through the shady copse, green mead, or fragrant heath, chronicled, perhaps oft traversed, by Britain's Schönherr, his name and the debt we owe him shall not be forgotten even in the collector's ruling passion—*amor habendi*.

The "Annals and Magazine of Natural History," of which the thirty-fourth volume is within a number of completion, was the next object of research; the entomological papers, I allude to those on *Coleoptera*, contained in this important periodical, although numerically comparatively insignificant, are of the highest order, and, with one exception, the selection of the species appertaining to my list occasioned me no difficulty.

Mr. Andrew Murray's "Catalogue of Scottish Coleoptera," William Blackwood & Sons, Edinburgh and London, 1853, next demanded my attention, and to this meritorious little book our list, as will be seen, is greatly indebted.

The "Catalogue of the Colcoptera of Northumberland and Durham," by Messrs. Hardy and Bold, published in the "Transactions of the Tyneside Naturalists' Field Club," and also in a separate form, has contributed no insignificant number of new species, particularly among the *Brachelytra*; and, although assuming the modest title of Catalogue, is replete with valuable observations, and the descriptions of new species leave nothing to be desired.

"The Proceedings of the Berwickshire Naturalists' Club" has likewise contributed to my undertaking.

To Mr. Hogan's "Catalogue of Coleoptera found in the neighbourhood of Dublin," published in the Zoologist, I must also acknowledge myself indebted for many novelties.

Mr. Wollaston's "Insecta Maderensia" has also afforded its quota, and I may, perhaps, here be permitted to observe that at least three-fourths of the genera of *Coleoptera* comprised in Mr. Wollaston's work, and to which order the present volume is restricted, are indigenous to Great Britain; that their characters have all been re-wrought from actual re-investigation, and that the student of British *Coleoptera* will, in the pages of this magnificent book, find ample and satisfactory details of upwards of one hundred and fifty genera of British Beetles.

In the "Transactions of the Entomological Society of London," of which the second part of the eighth volume has just made its appearance, and which embrace a period of no less than twenty years, only three papers have furnished matter for the present list.

Nearly two hundred and thirty species, none of which, it is presumed, are given in Mr. Stephens's "Manual of British Beetles," are comprised in this list; if to these we add those extant in our cabinets, but which have not been recorded, and which certainly do not fall far short of a hundred, it results that three hundred and thirty species have been discovered during the last fifteen years, or at the rate of twenty-two per annum, and, judging from the lists of the Coleopterous productions of countries occupying a geographical position very similar to our own, there exists ample room for at least a corresponding increase during the succeeding fifteen years.

I will conclude by remarking that the brief period allotted me for the completion of my task, and which has been accomplished during the short and uncertain intervals afforded by more urgent occupations, has precluded me from referring

to several works which would probably have augmented the list; but I trust that success will attend this little Annual, and that I may have an opportunity, in its successor, of supplying the omissions and correcting the errors of the present.

EDWARD W. JANSON.

FORTIS GREEN, NEAR FINCHLEY,
MIDDLESEX.
Nov. 20th, 1854.

NEW BRITISH COLEOPTERA SINCE 1839.

1. Dyschirius obscurus, Gyll.; Dawson, Geodeph. Brit., p. 29 (1854), *described.*

2. Dyschirius impunctipennis, Dawson, Geodeph. Brit., p. 29, tab. i. fig. a. (1854), *described.*

3. Dyschirius jejunus, Dawson, Geodeph. Brit., p. 31, tab. i. fig. b. (1854), *described.*

4. Calathus nubigena, Haliday, Ann. Nat. His., ii. p. 112 (1838), *described;* Dawson, Geodeph. Brit., p. 79, tab. i. fig. d. (1854), *described.*

5. Anchomenus (Agonum) atratus, Dufts; Dawson, Geodeph. Brit., p. 89 (1854), *described.*

6. Anchomenus (Agonum) quadripunctatus, De Geer, Eric. not Steph.; Dawson, Geodeph. Brit., p. 95, tab. i. fig. e. (1854), *described;* Hardy and Bold, Cat. Col. Northumberland and Durham, p. 6 (1848), and Appendix, p. 229 (1852).

7. Amara curta, Dej.; Dawson, Geodeph. Brit., p. 121 (1854), *described.*

8. Amara (Celia) ingenua, Dufts., Gyll., Eric., not Steph.; Dawson, Geodeph. Brit., p. 125 (1854), *described.*

9. Amara septentrionalis, Curtis, Ann. Nat. Hist. v., p. 275 (1840), *described.*

Observation.—I find no mention made either of this or the three following in Mr. Dawson's work. It is, however, incumbent on me to include them in the present list; the late Dr. Erichson, in his Entomological Report for the year 1841, p. 19 (Archiv für Naturgeschichte, 1842, ii. p. 207), remarks "that they

are characterised in such a way as not to permit a decision in their favour."

10. AMARA AGILIS, Rylands, Entom., p. 216 (1841), *described.*

11. AMARA PUNCTICOLLIS, Rylands, Entom., p. 216 (1841), *described.*

12. AMARA DALII, Rylands, Entom., p. 216 (1841), *described.*

13. TANYSTOMA JAGŒRI, Mann.

Observation.—This is the "new British genus of Carabideous *Coleoptera* allied to *Pterostichus*, captured by Mr. Leplastrier near Dover," exhibited by Mr. S. Stevens at the Meeting of the Entomological Society of 1st June, 1840, as recorded in the Proceedings of the Society. Mr. Stevens, in whose cabinet it is preserved, has kindly furnished its name, remarking "that it is in all probability an imported specimen, being a scarce Russian insect."

14. HARPALUS (Ophonus) CORDATUS, Dufts, Sturm; Dawson, Geodeph. Brit., p. 136 (1854), *described.*

15. HARPALUS (Ophonus) RUPICOLA, Sturm; Dawson, Geodeph. Brit., p. 136 (1854), *described.*

16. HARPALUS SULPHURIPES, Germar; Dawson, Geodeph. Brit., p. 141 (1854), *described.*

17. HARPALUS WOLLASTONI, Dawson, Geodeph. Brit. p. 144 (1854), *described.*

Observation.—Mr. Wollaston informs me that he suspects this will prove synonymous with *Harpalus litigiosus*, Dej. Spec. Gen. des Coléop., vol. iv. no. 137, p. 361 (1829).

18. HARPALUS MELANCHOLICUS, Dej., Erie.; Dawson, Geodeph. Brit., p. 150, tab. ii. fig. A. (1854), *described.*

19. STENOLOPHUS ELEGANS, Dej.; Dawson, Geodeph. Brit., p. 156, tab. ii. fig. B. (1854), *described.*

20. STENOLOPHUS DERELICTUS, Dawson, Geodeph. Brit., p. 159 (1854), *described.*

21. STENOLOPHUS FLAVICOLLIS, Sturm, not Steph.; Dawson, Geodeph. Brit., p. 160 (1854), *described;* Zool. p. 2112 (1848).

22. STENOLOPHUS EXIGUUS, Dej., Eric.; Dawson, Geodeph. Brit., p. 161 (1854), *described.*

23. BRADYCELLUS COGNATUS, Gyll., Dej., not Steph.; Dawson, Geodeph. Brit., p. 163 (1854), *described.*

24. TRECHUS INCILIS, Dawson, Ann. and Mag. Nat. Hist., 2nd ser., vol. iii. p. 213 (1849), *described;* Geodeph. Brit., p. 168, tab. ii. fig. D., tab. iii. fig. 3 (1854), *described.*

25. AEPUS ROBINII, Laboulb.; T. V. Wollaston, Zool., p. 3090 (1850); Murray, Cat. Scot. Col., p. 11 (1853); Dawson, Geodeph. Brit., p. 171 (1854), *described* "*Aëpys.*"

26. BEMBIDIUM (Peryphus) BRUXELLENSE, Wesmael; Rev. H. Clark, Zool., p. 3705 (1852); Hardy and Bold, Cat. Col. Northumberland and Durham, App. p. 236 (1852); Murray, Cat. Scot. Col., p. 13 (1853); A. R. Hogan, Zool., p. 4136 (1853); Dawson, Geodeph. Brit., p. 182 (1854), *described.*

27. BEMBIDIUM (Peryphus) FLUVIATILE, Dej.; Dawson, Geodeph. Brit., p. 184 (1854), *described.*

28. BEMBIDIUM (Peryphus) TESTACEUM, Dufts; Dawson, Geodeph. Brit., p. 186 (1854), *described;* Ann. and Mag. Nat. Hist., 2nd ser., vol. iii. p. 214 (1849), *described* '*Peryphus neglectus*;" Hardy and Bold, Cat. Col. Northumberland and Durham, App., p. 236 (1852), "*Bembidium tricolor*, F."

29. BEMBIDIUM (Peryphus) STOMOIDES, Dej.; Dawson, Geodeph. Brit., p. 188, tab. iii. fig. A. (1854), *described.*

30. BEMBIDIUM (Notaphus) OBLIQUUM, Sturm, Dej., Eric., not Steph.; Dawson, Geodeph. Brit., p. 195, tab. ii. fig. E. (1854), *described;* Hardy and Bold, Cat. Col. Northumberland and Durham, App. p. 237 (1852).

31. BEMBIDIUM (Notaphus) CLARKII, Dawson, Ann. and Mag. Nat. Hist., 2nd ser., vol. iii. 215 (1849), "*Lopha*;" Geodeph. Brit., p. 199, tab. iii. fig. E. (1854), *described*; T. V. Wollaston, Zool., p. 3617 (1852).

32. BEMBIDIUM (Leja) SCHUPPELII, Dej.; Dawson, Geodeph. Brit., p. 201, tab. iii. fig. D. (1854), *described*; T. J. Bold, Zool., p. 3289 (1851), p. 4195 (1854); Murray, Cat. Scot. Col., p. 14 (1853).

33. BEMBIDIUM (Lopha) DORIS, Panz., Gyll., Sturm, Eric., not Steph.; Dawson, Geodeph. Brit., p. 203 (1854), *described*.

34. BEMBIDIUM (Lopha) CALLOSUM, Küster; Dawson, Geodeph. Brit., p. 206, tab. iii. fig. C. (1854), *described*.

35. HALIPLUS FLUVIATILIS, Aubé, Schaum, Zool., p. 1889, (1847).

36. HYDROPORUS TRISTIS, Payk., not Steph., Schaum, Zool., p. 1892 (1847); T. J. Bold, Zool., p. 4193 (1854).

37. HYDROPORUS OBSCURUS, Sturm (*Hydrop. umbrosus*, Steph. ?); Schaum, Zool., p. 1892 (1847).

38. HYDROPORUS MINUTISSIMUS, Germ.; Schaum, Zool., p. 1893 (1847); T. V. Wollaston, Zool., p. 1574 (1847); Ann. and Mag. Nat. Hist., vol. xviii. 453, tab. ix. A. fig. 3 (1847), *described* "*Hydrop. trifasciatus*."

39. COLYMBETES DISPAR, Bold, Zool., App. p. xxiv. (1849), *described*; Trans. Tyneside Nat. Club, vol. i. 277; Hardy and Bold, Cat. Col. Northumberland and Durham, p. 240, Appendix (1852).

Observation.—Probably not specifically distinct from *Agabus uliginosus*, Payk.

40. AGABUS STRIOLATUS, Gyll.; A. White, Brit. Mus. Cat., Hydrocanth., p. 25 (1847); not *striolatus*, Steph. *see.* Schaum, Zool., p. 1894 (1847); Babington, Ann. and Mag. Nat. Hist., vol. vi. p. 54 (1840), *described* "*Colymbetes* (*Agabus* § 4) *rectus*."

41. HELOPHORUS RUGOSUS, Oliv.; Murray, Cat. Scot. Col., p. 135 (1853).

42. HYDROCHUS PARUMOCULATUS, Hardy; Hardy and Bold, Cat. Col. Northumberland and Durham, Appendix, p. 242 (1852), *described.*

Observation.—Mr. Hardy remarks—"I have no record for this beyond finding it in my collection made near Newcastle; I take it to be a foreign insect."

43. OCHTHEBIUS EXARATUS, Mulsant; G. R. Waterhouse, Proc. Ent. Soc. Lond., 4th April, 1853; Ann. and Mag. Nat. Hist., 2nd ser., vol. xi. 480 (1853); Trans. Ent. Soc. Lond., 2nd ser., vol. ii. 231.

44. COLON DENTIPES, Sahlb.; Murray, Cat. Scot. Col., p. 31 (1853).

45. COLON SPINIPES, Haliday, Entom., p. 190 (1841), *described* "*Mylæchus.*"

46. COLON FUSCULUS, Eric.; Haliday, Entom., p. 190 (1841), "*Mylæchus*;" Murray, Cat. Scot. Col., p. 31 (1853).

47. COLON CLAVIGER, Hbst.; Murray, Cat. Scot. Col., p. 31 (1853).

48. COLON APPENDICULATUS, Sahlb.; Haliday, Entom., p. 190 (1841), "*Mylæchus.*"

49. CATOPS UMBRINUS, Eric.; Murray, Cat. Scot. Col., p. 30 (1853).

50. CATOPS GRANDICOLLIS, Eric.; Murray, Cat. Scot. Col., p. 31 (1853).

51. CATOPS PRÆCOX, Eric.; Murray, Cat. Scot. Col., p. 31 (1853).

52. LEPTINUS TESTACEUS, Müller; Hardy, Zool., p. 2277 (1848), *described*; J. O. Westwood, Proc. Ent. Soc. Lond., 3 Nov. 1851; Zool., p. 3311 (1851); Murray, Cat. Scot. Col., p. 32 (1853).

53. LEIODES VITTATA, Curtis, Ann. Nat. Hist., vol. v. 276 (1840), *described.*

54. Leiodes latifrons, Curtis, Ann. Nat. Hist., vol. v. 276 (1840), *described.*

55. Agathidium pumilum, Hardy; Hardy and Bold, Cat. Col. Northumberland and Durham, Appendix, p. 244 (1852), *described.*

56. Agathidium Lycogalgæ, Hardy; Hardy and Bold, Cat. Col. Northumberland and Durham, Appendix, p. 245 (1852), *described.*

57. Agathidium marginatum, Sturm.

Observation.—This specific title, Mr. Wollaston informs me, should be substituted for "*badium*, Erie.," indicated by him with doubt, Zool., p. 1575 (1847).

58. Tychus ibericus, Motsch., Schaum; Zool., p. 1933 (1847); T. V. Wollaston, Zool., p. 3621 (1852).

59. Calodera rubicunda, Eric.; Hardy and Bold, Cat. Col. Northumberland and Durham, p. 132 (1851), *described.*

60. Tachyusa flavitarsis, Sahlb.; Hardy, Proc. Berwicksh. Nat. Club, ii. no. vi. p. 283; Hardy and Bold, Cat. Col. Northumberland and Durham, p. 128 (1851), *described;* Murray, Cat. Scot. Col., p. 106 (1853).

61. Tachyusa uvida, Eric.; Hardy and Bold, Cat. Col. Northumberland and Durham, p. 126 (1851), *described.*

62. Tachyusa carbonaria, Mannerh.; Hardy and Bold, Cat. Col. Northumberland and Durham, p. 130 (1851), *described;* Murray, Cat. Scot. Col., p. 106 (1853).

63. Homalota Algæ, Hardy; Hardy and Bold, Cat. Col. Northumberland and Durham, p. 116 (1851), *described.*

64. Homalota nivalis, Kiesenwetter; Hardy and Bold, Cat. Col. Northumberland and Durham, p. 115 (1851), *described.*

65. Homalota immersa, Eric.; Hardy and Bold, Cat. Col. Northumberland and Durham, p. 118 (1851), *described.*

66. HOMALOTA AUTUMNALIS, Eric.; Hardy and Bold, Cat. Col. Northumberland and Durham, p. 121 (1851), *comparative characters given*; Murray, Cat. Scot. Col., p. 108 (1853).

67. HOMALOTA CAUTA, Eric.; Hardy and Bold, Cat. Col. Northumberland and Durham, p. 123 (1851), *described*; Murray, Cat. Col., p. 108 (1853).

68. HOMALOTA CELATA, Eric.; Hardy and Bold, Cat. Col. Northumberland and Durham, p. 123 (1851), *described*; Murray, Cat. Scot. Col., p. 108 (1853).

69. HOMALOTA HYGROPHILA, Hardy; Hardy and Bold, Cat. Col. Northumberland and Durham, p. 124 (1851), *described*; Murray, Cat. Scot. Col., p. 108 (1853).

70. OXYPODA TESTACEA, Eric.; Hardy and Bold, Cat. Col. Northumberland and Durham, p. 113 (1851), *described*; Murray, Cat. Scot. Col., p. 108 (1853).

71. OXYPODA LENTULA, Eric.; Hardy and Bold, Cat. Col. Northumberland and Durham, p. 114 (1851), *described*.

72. OXYPODA MAURA, Eric.; T. J. Bold, Zool., p. 4038 (1853).

73. PLACUSA HUMILIS, Eric.; Murray, Cat. Scot. Col., p. 110 (1853).

74. MYLLÆNA GRACILIS, Heer; Hardy and Bold, Cat. Col. Northumberland and Durham, p. 109 (1851); Murray, Cat. Scot. Col., p. 110 (1853).

75. GYMNUSA BREVICOLLIS, Payk., Eric.; Haliday, Entom., p. 188 (1841); Hardy, Proc. Berwicksh. Nat. Club, vol. ii. no. vi. p. 283; Steph. Manual, p. 372, 2930 (1839).

Observation.—Stated by Mr. Stephens to have been "improperly recorded as British," and therefore comprised in the present list.

76. Othius 6-punctatus, Haliday, Entom., p. 187 (1841).

77. Quedius oblitteratus, Erie.; T. V. Wollaston, Zool., p. 1576 (1847).

78. Quedius auricomus, Kiesenw.; Murray, Cat. Scot. Col., p. 123 (1853); Hardy, Proc. Berwicksh. Nat. Club, vol. ii. no. v. p. 258 (1847), *described* "*Q. scintillans.*"

79. Raphirus nigricornis, Holme, Trans. Ent. Soc. Lond. vol. iii. 127 (1842), *described*.

80. Lathrobium angusticolle, Boisd. and Lacord.; A. R. Hogan, Zool., p, 4340 (1854).

81. Lathrobium carinatum, T. J. Bold, Proc. Tyneside Nat. Club, 31st of August, 1854; Zool., p. 4483 (1854).* *Described* as follows by Mr. Bold, and represented on the frontispiece, fig. 6:

Deep jet black, very glossy, sparingly clothed with griseous pubescence.

Head large, fully one-third wider than the thorax, orbicular, depressed, closely and very distinctly punctured, with an impression a little before the vertex in front; labrum rufous, fringed with golden hair; mandibles long, curved, prominent, rufous, black on the outer edges, and at the tip; antennæ elongate, as long or longer than the head and thorax together, graceful, rufous; the basal joint with a dusky annulation; palpi also rufous.

Thorax narrow, elongate-oval, much depressed, coarsely

* [(Note by the Editor).—This appears from a paper read by Mr. Janson before the Entomological Society of London, March 5th, 1855, to be identical with the preceding species *L. angusticolle*. It is but just to Mr. Janson to observe, that in enumerating it previously as distinct, he did so on the strength of Mr. Bold's record of the species as an undescribed one; Mr. Janson not having, at that time, had an opportunity of examining the specimens.]

punctulated, with a distinctly elevated central carina, which is exceedingly smooth and glossy.

Scutellum obtusely triangular, punctulated.

Elytra bright blood red, black for one-third the length at the base, distinctly punctulate, somewhat wider than the thorax, parallel, depressed, the suture elevated, with a stria on each side.

Abdomen depressed, strongly margined, very finely punctured, the antepenultimate segment narrowly edged with white, the last sparingly covered by stout black diverging hairs.

Beneath finely punctured and pubescent, black.

Legs elongate, black, the trochanters rufo-brunneous, the apices of the tibia and the tarsi rufous, and covered with aureous pubescence.

Male, with the fifth segment beneath sinuated, the sixth canaliculate.

Female, with the penultimate segment beneath a little produced and rounded.

Length 3—3½ lines.

This very distinct insect is certainly the most beautiful of its genus, the bright blood-red of its elytra contrasting strongly with the shining black of its body; whilst the large orbicular head, narrow carinated thorax, elongate antennæ and legs, give it quite the appearance of a *Stilicus*.

It would appear to be very rare, two specimens only having come beneath my notice: one, a male, I took amongst gravel, near the river Irthing, Cumberland, in June, 1847; the other, a fine female, was captured in a similar locality, on the Devil's Water, Northumberland, by Geo. Wailes, Esq. at the Club's field meeting, in May last.

T. J. B.

82. LITHOCHARIS FUSCULA, Boisd. and Lacord.; T. V. Wollaston, Insecta Maderensia, p. 590 (1854), *described.*

83. STILICUS AFFINIS, Eric.; Hardy and Bold, Cat. Col. Northumberland and Durham, p. 80 (1851), *described.*

84. SUNIUS UNICOLOR, Curtis, Ann. Nat. Hist., vol. v. p. 277 (1840), *described.*

Observation.—I am unable to decide whether this is identical with *Sunius unicolor* of Stephens, published in the previous year (1839), and have thus included it in the present list: the description is most unsatisfactory. In my MSS. I have placed it with a doubt as a synonym of *Lathrobium obsoletum*, Nordman, Symb. ad Mon. Staph. 146, 18 (1837); *Lithocharis obsoleta*, Eric.; Käfer der Mark Brand., 516, 8 (1839); Gen. et Spec. Staph. 623, 24 (1840).

85. STENUS ATRATULUS, Eric.; Hardy and Bold, Cat. Col. Northumberland and Durham, p. 82 (1851).

86. STENUS PUMILIO, Eric.; A. R. Hogan, Zool., p. 4340 (1854).

87. STENUS CONTRACTUS, Eric.; Curtis, Ann. Nat. Hist., vol. v. 277 (1840), *described* "*Stenus basalis.*"

Observation.—This is the *Stenus contractus*, Eric.; Käfer der Mark Brand., p. 573, no. 52 (1839); Gen. et Spec. Staph., p. 744, no. 194 (1840), as indicated by him in his Entom. Report for 1841, p. 23 (Archiv, 1842, vol. ii. p. 211). It is likewise the *Stenus fornicatus*, Kirby, MSS., as incontrovertibly demonstrated by the specimen, still extant in his collection, and having his ticket on the pin; but, unfortunately, neither the insects thus named in the cabinet of the late Mr. Stephens, nor the description published by him, agree with the present insect; the name, therefore, imposed by the learned Entomologist of Berlin will stand by right of priority, he

having first described the species under the name which I have adopted.

88. BLEDIUS SUBTERRANEUS, Eric.; Hardy, Proc. Berwicksh. Nat. Club, vol. ii. no. vi. p. 286; Hardy and Bold, Cat. Col. Northumberland and Durham, p. 87 (1851), *described;* Murray, Cat. Scot. Col., p. 128 (1853).

89. TROGOPHLŒUS SCROBICULATUS, Eric.; Murray, Cat. Scot. Col., p. 129 (1853).

90. THINOBIUS LONGIPENNIS, Heer; Murray, Cat. Scot. Col., p. 129 (1853); A. R. Hogan, Zool., p. 4340 (1854).

91. ARPEDIUM BRACHYPTERUM, Grav., Eric.; Hardy and Bold, Cat. Col. Northumberland and Durham, p. 94 (1851), *described;* Murray, Cat. Scot. Col., p. 131 (1853).

92. OMALIUM CONFORMATUM, Hardy; Hardy and Bold, Cat. Col. Northumberland and Durham, p. 97 (1851), *described;* Murray, Cat. Scot. Col., p. 132 (1853).

93. OMALIUM MESOMELAS, Holme, Trans. Ent. Soc. Lond., vol. iii. 128 (1842), *described* "*O. sordidum, var.?*"

94. BOREAPHILUS BREVICOLLIS, Haliday, Entom., p. 187 (1841), *described.*

95. PROTEINUS ATOMARIUS, Eric.; Murray, Cat. Scot. Col., p. 133 (1853); A. R. Hogan, Zool., p. 4340 (1854).

96. SAPRINUS DIMIDIATUS, F.; A. R. Hogan, Zool., p. 1496 (1854).

Observation.—This should probably be *dimidiatus*, Illig., as I find no *Saprinus* (*Hister*) *dimidiatus* in the "Systema Eleutheratorum."

97. ABRÆUS VULNERATUS (Kug.?); J. F. Stephens, Zool., p. 1996 (1848).

Observation.—Mr. Stephens has appended no author's name, either to the present insect or to any of those recorded in the same list. I have added, in parenthesis, and with a mark of doubt, the name of the only writer who, as far as I can ascertain, has de-

scribed a species of *Histeridæ* under this specific title: should my conjecture prove correct, we have here not only a species but a genus new to the British list. *Plegaderus vulneratus*, Kug. [*Hister vulneratus*, Kugel. in Illig. Käf. Preus., 62, 18 (1798)]. *H. vulneratus*, var. b. Gyll. Ins. Succ., i. 97, 29 (1808); Panz. Faun. Ins. Germ. Fas. 37, tab. 6 (1797). *Plegaderus vulneratus*, Eric. in Klug. Jahrb. d. Insekt., 204, 3 (1834).

98. TRICHOPTERYX SERICANS, Heer; A. R. Hogan, Zool., p. 4196 (1854); Murray, Cat. Scot. Col., p. 32 (1853), "*T. depressa*, Sturm."

Observation. — Mr. Wollaston, Insecta Maderensia, p. 107 (1854), adopts for this insect and its allies the generic title *Acratrichis*, published by Motschulsky in 1848; I refer the student to the reasons there adduced for the change thus made in strict conformity with the laws of nomenclature, and for ample generic details.

99. TRICHOPTERYX CURTUS, Alib.; A. R. Hogan, Zool. p. 4196 (1854).

100. PTENIDIUM LÆVIGATUM, Gillm., Erich.; Murray, Cat. Scot. Col., p. 135 (1853).

101. PTENIDIUM APICALE, Sturm. Erich.; Murray, Cat. Scot. Col. p. 135 (1853); A. R. Hogan, Zool., p. 4196 (1854), "*Anisarthria apicalis*, Gyll."?

Observation.—Full generic details and an ample description of the present species will be found in Mr. Wollaston's Insecta Maderensia, p. 110 (1854).

102. ANISARTHRIA PUNCTATA, Gyll.; A. R. Hogan, Zool., p. 4196 (1854).

103. PHALACRUS CASTANEUS, Curtis, Ann. Nat. Hist., vol. v. p. 276 (1840), *described*.

104. EPUREA MELINA, Erich.; Murray, Cat. Scot. Col., p. 135 (1853).

105. RHIZOPHAGUS CŒRULEUS, Waltl.; Hardy and Bold, Cat. Col. Northumberland and Durham, p. 247, Appendix (1852); Hardy, Ann. and Mag. Nat. Hist., vol. xix. 379 (1847), *described* "*Rhizophagus cyaneipennis*, Hardy;" Hardy and Bold, Cat. Col. Northumberland and Durham, p. 50 (1848); Schaum, Zool., p. 1888 (1847), "*R. cœruleus*, Waltl.?"

106. DENDROPHAGUS CRENATUS, Payk.; Murray, Cat. Scot. Col., p. 135 (1853); Weaver, Proc. Ent. Soc. Lond., 1st Nov. 1852; Zool., p. 3718 (1852), "*Brontes flavipes*."

107. CRYPTOPHAGUS BADIUS, Sturm; T. J. Bold, Zool., p. 4038 (1853).

108. CRYPTOPHAGUS DENTATUS, Hbst.; T. J. Bold, Zool., p. 4038 (1853).

109. CRYPTOPHAGUS SUBDEPRESSUM, Gyll., T. J. Bold, Zool., p. 4038 (1853).

110. ATOMARIA NIGRICEPS, Erich.; Murray, Cat. Scot. Col., p. 41 (1853).

111. ATOMARIA TURGIDA, Erich.; Murray, Cat. Scot. Col., p. 41 (1853).

112. ATOMARIA TERMINATA, Comolli; T. V. Wollaston, Zool., p. 3622 (1852); Murray, Cat. Scot. Col., p. 41. (1853).

113. ATOMARIA PALLIDA, Wollaston, Ann. & Mag. Nat. Hist., vol. xviii. p. 452, tab. ix. A. fig. 1 (1847), *described.*

114. EPHISTEMUS GLOBOSUS, Waltl., Erich.; T. J. Bold, Zool., p. 4038 (1853).

115. EPHISTEMUS PALUSTRIS, Wollaston, Ann. & Mag. Nat. Hist. vol. xviii. p. 453, tab. ix. A. fig. 2 (1847), *described.*

116. PARNUS MONTANUS, Curtis, Ann. Nat. Hist. vol. v. p. 276 (1840), *described.*

Observation.—I find no mention made of this in any

of the Catalogues, Mr. Curtis's Guide of course excepted; Dr. Erichson is silent with respect to it.

117. HETEROCERUS FEMORALIS, Kiesenw.; T. V. Wollaston, Zool., p. 3622 (1852); A. R. Hogan, Zool., p. 4136 (1854).

118. TRICHIUS ZONATUS, Schmidt, Germar; F. Smith, Zool., p. 2216 (1848), *described*.

119. CETONIA ÆNEA, Gyll.; J. F. Stephens, Zool., p. 1966 (1848); S. Stevens, Proc. Ent. Soc. Lond., 2 Septr. 1850; Zool. p. 2938 (1850); Weaver, Proc. Ent. Soc. Lond., 1 Septr. 1851; Zool. p. 3271 (1851); observations on the habits of the larva, Proc. Ent. Soc. Lond., 1 Nov. 1852; Zool., p. 3718 (1852); J. Scott, Zool., p. 4075 (1853).

120. AMPHIMALLA VERNA, Meg.? S. Stevens, Proc. Ent. Soc. Lond., 2 Sept. 1850; Zool., p. 2938 (1850).

121. APHODIUS LAPPONUM, Gyll.; Hardy and Bold, Cat. Col. Northumberland and Durham, p. 142 (1852); Weaver, Proc. Ent. Soc. Lond., 1 Nov. 1852; Zool., p. 3718 (1852); Murray, Cat. Scot. Col., p. 48 (1853); T. J. Bold, Zool., p. 4195 (1854); Hardy, Ann. & Mag. Nat. Hist., vol. xix. p. 380 (1847), *described* "*Aphodius subalpinus*, Hardy."

122. APHODIUS ALPINUS, Scop.; T. J. Bold, Zool., p. 4195 (1854).

123. APHODIUS ULIGINOSUS, Hardy; Ann. & Mag. Nat. Hist., vol. xix. p. 382 (1847), *described;* Hardy and Bold, Cat. Col. Northumberland and Durham, p. 143 (1852); Weaver, Proc. Ent. Soc. Lond., 1 Nov. 1852; Zool., p. 3718 (1852); Murray, Cat. Scot. Col., p. 49 (1853).

124. ANCYLOCHEIRA MAURITANICA, Lucas; F. Bond, Zool., p. 1999 (1847).

Observation.—As my province on the present occasion is merely to enumerate the species recorded to have occurred in Britain since the appearance of Mr. Stephens's Manual, it is clearly incumbent on me to

notice the present insect, which, notwithstanding the softness of its elytra, when first taken, afford perhaps sufficient evidence of its having undergone at least its final metamorphosis in Great Britain, can surely have no claim to admission into the lists of our indigenous species.

125. CARDIOPHORUS FORMOSUS, Curtis; Ann. Nat. Hist., vol. v. p. 278 (1840), *described;* Trans. Ent. Soc. Lond., 2nd ser. vol. iii. p. 15, tab. ii. fig. 6 (1854), *described.*

Observation.—Probably only a variety of *C. sexpunctatus,* an exceedingly variable species, to which Mr. Curtis indicates its near relationship; it is not *Cardiophorus ornatus,* Dej.

126. CARDIOPHORUS TESTACEUS, F.; A. R. Hogan, Zool., p. 4197 (1854).

127. APLOTARSUS MARITIMUS, Curtis; Ann. Nat. Hist., vol. v. p. 277 (1840), *described;* Trans. Ent. Soc. Lond., 2nd ser. vol. iii. p. 15, tab. ii. fig. 5 (1854), *described;* Hardy and Bold, Cat. Col. Northumberland and Durham, p. 152 (1851).

Observation.—This is probably a true *Cardiophorus,* but it is certainly not congeneric with the insects placed by Mr. Stephens in his Genus *Aplotarsus.*

128. AMPEDUS TRISTIS, L.; Weaver, Proc. Ent. Soc. Lond., 2nd May, 1853; Zool., p. 3921 (1853); Murray, Cat. Scot. Col., p. 135 (1853), "*Elater.*"

129. AMPEDUS SUBCARINATUS, Germar; Zeitschrift für die Entomologie, vol. v. p. 177, no. 39 (1844); *Ampedus tibialis,* Dej. Cat.; Curtis, Trans. Ent. Soc. Lond., 2nd ser. vol. iii. p. 16, tab. ii. fig. 7, *described;* "*Aplotarsus? cothurnatus,* Curtis."

130. AMPEDUS LUGENS, Redtenbacher, Dissert. Inaug. Vindob. (1842), "*Elater;*" Germar, Zeitschrift, f. d. Entom., vol. v. p. 177, no. 40 (1844); *Ampedus anthracinus,* Dej.

Cat.; Curtis, Brit. Ent., tab. & p. 694; "*Ectinus aterrimus*," but not of Linnæus or Stephens; Trans. Ent. Soc. Lond., 2nd ser. vol. iii. p. 12, tab. ii. fig. 2 (1854), *described*; "*Ectinus? gagates*, Curtis."

131. DIACANTHUS IMPRESSUS, Fab.; S. Stevens, Proc. Ent. Soc. Lond., 6th Feb. 1854; Zool., p. 4234 (1854); J. Foxcroft, Proc. Ent. Soc. Lond., 5th June, 1854; Zool., p. 4386 (1854).

132. DICTYOPTERUS AURORA, Fab.; J. F. Stephens, Zool., p. 2961 (1850); Weaver, Proc. Ent. Soc. Lond., 1 Nov. 1852; Zool., p. 3718 (1852), "*Lycus Aurora*;" Murray, Cat. Scot. Col., p. 56 (1853).

133 TELEPHORUS UNICOLOR, Curtis; Ann. Nat. Hist., vol. v. p. 279 (1840), *described*.

Observation.—Considered by Erichson, Ent. Bericht, for 1841, p. 29; Archiv, 1842, vol. ii. p. 217, as probably not distinct from *Cantharis pilosa*, Payk.

134. TELEPHORUS APICALIS, Curtis; Ann. Nat. Hist., vol. v. p. 279 (1840).

135. RAGONYCHA PALUDOSA, Gyll.; Hardy and Bold, Cat. Col. Northumberland and Durham, p. 156 (1851); Curtis, Ann. Nat. Hist., vol. v. p. 279 (1840), *described*, "*Telephorus Æthiops*, Curtis."

136. PTINUS RAPTOR, Sturm; J. F. Stephens, Entom., p. 200 (1841).

137. BOLITOPHAGUS CRENATUS, Fab.; Weaver, Proc. Ent. Soc. Lond., 1 Nov. 1852; Zool., p. 3718 (1852); "*Boletophagus crenicollis*," Proc. Ent. Soc. Lond., 2 May, 1853; Zool., p. 3921 (1853); F. Smith, Proc. Ent. Soc. Lond., 1 Aug. 1853; Zool., p. 4042 (1853); J. Foxcroft, Proc. Ent. Soc. Lond. 6 March, 1854; Zool., p. 2472 (1854); Murray, Cat. Scot. Col., p. 99 (1853), "*Bol. reticulatus*, L."

138. TETRATOMA DESMARETSII, Lat.; J. F. Stephens,

Zool., p. 1996 (1848); E. W. Janson, Zool., p. 2100 (1848), *described;* J. Walker, Zool., p. 3102 (1851); Curtis, Ann. Nat. Hist., vol. v. p. 276 (1840), *described* "*Tetratoma pallida*, Curtis."

Observation.—I am indebted to Mr. Francis Walker for an opportunity of leisurely and carefully examining one of the original specimens described by Mr. Curtis, and which is most unquestionably only a pale variety of Latreille's species, such as I have alluded to, *loc. cit.*

139. DIRCÆA DISCOLOR, Fab.; S. Stevens, Proc. Ent. Soc. Lond., 3 Nov. 1851; Zool., p. 3309 (1851); Weaver, Proc. Ent. Soc. Lond., 1 Nov. 1852; Zool., p. 3718 (1852); Murray, Cat. Scot. Col., p. 101 (1853).

140. SERROPALPUS VAUDOUERII, Lat.?; Westwood, Zool., p. 701 (1844).

141. PYROCHROA PECTINICORNIS, Fab.; S. Stevens, Proc. Ent. Soc. Lond., 3 July, 1854; Zool., p. 4419.

142. PYTHO DEPRESSUS, L.; Weaver, Proc. Ent. Soc. Lond., 1 Nov. 1847; J. F. Stephens, Zool., p. 1996 (1848); S. Stevens, Proc. Ent. Soc. Lond., 2 Sept. 1850; Zool., p. 2938 (1850); Weaver, Proc. Ent. Soc. Lond., 1 Nov. 1852; Zool., p. 3718 (1852); Murray, Cat. Scot. Col., p. 100 (1853), (see frontispiece, fig. 7).

143. ANTHICUS FENESTRATUS, Dej. Cat.?; T. V. Wollaston, Zool., p. 1939 (1847).

Observation.—This insect is now referred by Mr. Wollaston, in his "Insecta Maderensia," p. 536 (1854), to var. β of *A. tristis*, Schmidt.

144. BRUCHUS PISI, L. (*nec* Steph.); J. Walton, Ann. and Mag. Nat. Hist., vol. xiii. p. 206 (1844), *described.*

145. BRUCHUS FLAVIMANUS, Schönh.?; J. Walton, Ann. and Mag. Nat. Hist., vol. xiii. p. 207 (1844), *described.*

146. Bruchus luteicornis, Illig., Schönh.; J. Walton, Ann. and Mag. Nat. Hist., vol. xiii. p. 209 (1844), *described.*

147. Rhynchites Bacchus, L. (*nec* Steph.); J. Walton, Proc. Ent. Soc. Lond., 4th Dec. 1843; Ann. and Mag. Nat. Hist., vol. xii. p. 212 (1843), vol. xiii. p. 88 (1844), *described.*

148. Apion Germari, Walton; Ann. and Mag. Nat. Hist., vol. xiii. p. 456 (1844), *described.*

149. Apion dissimile, Schönh.; J. Walton, Ann. and Mag. Nat. Hist., vol. xv. p. 392 (1845), *described;* S. Stevens, Proc. Ent. Soc., 6th Sept. 1841; Entom., p. 224 (1841); Rev. J. F. Dawson, Zool., p. 2276 (1848).

150. Apion Schönherri (Waterh. MSS.), Schönh.; J. Walton, Ann. and Mag. Nat. Hist., vol. xv. p. 341, (1845), *described;* S. Stevens, Entom., p. 225 (1841); Proc. Ent. Soc. Lond., 4th Sept. 1843.

151. Apion miniatum, Schönh.; A. R. Hogan, Zool., p. 4199 (1854).

152. Apion sanguineum, De Geer, Gyll., Schönh. (*nec* Steph.); J. Walton, Ann. and Mag. Nat. Hist., vol. xiii. p. 452 (1844), *described;* Hardy and Bold., Cat. Col. Northumberland and Durham, p. 173 (1852).

153. Apion cruentatum, Walton, (*sanguineum*, Mus. Steph.); J. Walton, Ann. and Mag. Nat. Hist., xiii. p. 452 (1844), *described;* Hardy and Bold, Cat. Col. Northumberland and Durham, p. 173 (1852); Murray, Cat. Scot. Col., p. 80 (1853).

154. Apion Curtisii, Curtis, Ann. Nat. Hist., vol. v. p. 281 (1840), *described;* J. Walton, Ann. and Mag. Nat. Hist., vol. xiii. p. 450 (1844), *described;* S. Stevens, Zool., p. 224 (1841).

155. Apion afer, Schönh.; Murray, Cat. Scot. Col., p. 136 (1853).

156. APION LIVESCERUM, Schönh.; J. Walton, Ann. and Mag. Nat. Hist., vol. xv. p. 400 (1845), *described*; T. V. Wollaston, Zool., p. 413 (1844), under the name of "*A. Hedysari*, Walt."

157. APION PAVIDUM, Germ., Schönh.; J. Walton, Ann. and Mag. Nat. Hist., vol. xv. p. 397 (1845), *described*.

158. APION SEDI, Germar; Rev. J. F. Dawson, Zool., p. 2553 (1849); S. Stevens, Zool., p. 2935 (1850); Murray, Cat. Scot. Col., p. 136 (1853).

159. STROPHOSOMUS HIRTUS, Schönh.; Walton, Ann. and Mag. Nat. Hist., vol. xvii. p. 309 (1846), *described*.

160. STROPHOSOMUS FULVICORNIS, Walton, Ann. and Mag. Nat. Hist., vol. xvii. p. 307 (1846), *described*.

161. SITONA TIBIALIS, Hbst.; Walton, Ann. and Mag. Nat. Hist., vol. xvii. p. 233 (1846), *described;* Hardy and Bold, Cat. Col. Northumberland and Durham, p. 179 (1852).

162. SITONA MELILOTI, Walton, Ann. and Mag. Nat. Hist., vol. xvii. p. 232 (1846), *described;* S. Stevens, Zool., p. 750 (1844).

163. SITONA WATERHOUSEI (Schönh. in litt.); Walton, Ann. and Mag. Nat. Hist., vol. xvii. p. 234 (1846), *described;* S. Stevens, Proc. Ent. Soc. Lond., 2nd Oct. 1848.

164. POLYDRUSUS PLANIFRONS (Dej. Cat.), Schönh.; J. Walton, Ann. and Mag. Nat. Hist., vol. xvii. p. 18, (1846), *described*.

165. HYPERA TIGRINA (Dej.), Schönh.; Walton, Ann. and Mag. Nat. Hist., 2nd ser., vol. i. p. 298 (1848), *described;* F. Grant, Proc. Ent. Soc. Lond. 2nd Aug. 1852; Zool., p. 3590 (1852).

166. LIMOBIUS MIXTUS, Schönh.; Walton, Ann. and Mag. Nat. Hist., 2nd ser. vol. i. p. 300 (1848), *described;* T. V. Wollaston, Zool., p. 1936 (1847), "*Phytonomus mixtus;*" S. Stevens, Proc. Ent. Soc. Lond., 2 Oct. 1848, erro-

neously "*Platyonomus;*" Rev. J. F. Dawson, Zool., p. 2553 (1849); Rev. J. P. Bartlett, Zool., p. 3355 (1852).

167. PROCAS GRANULICOLLIS, Walton, Ann. and Mag. Nat. Hist., 2nd ser. vol. ii. p. 168 (1848), *described.*

168. TRACHYPHLŒUS ALTERNANS, Schönh.; Walton, Ann. and Mag. Nat. Hist., vol. xix. p. 222 (1847), *described;* Rev. J. F. Dawson, Zool., p. 2552 (1849).

169. CATHORMIOCERUS SOCIUS, Schönh.; Walton, Ann. and Mag. Nat. Hist., vol. xix. p. 316 (1847).

170. OMIAS BOHEMANNI, Schönh.; T. V. Wollaston, Zool., p. 613 (1844), incorrectly "*Omias Baumanii*, Germ.;" Walton, Ann. and Mag. Nat. Hist., vol. xix. p. 315 (1847), *described;* J. Hardy, Zool., p. 1804 (1847); Hardy and Bold, Cat. Col. Northumberland and Durham, p. 185 (1852); Murray, Cat. Scot. Col., p. 72 (1853).

171. OMIAS SULCIFRONS, Schönh.; R. N. Greville, Zool., p. 340 (1843); T. V. Wollaston, Zool., p. 702 (1844), p. 851 (1845), "*O. sulcirostris;*" J. Walton, Ann. and Mag. Nat. Hist., vol. xix. p. 316 (1847), *described;* Hardy and Bold, Cat. Col. Northumberland and Durham, p. 185 (1852); Murray, Cat. Scot. Col., p. 73 (1853).

172. OTIORHYNCHUS FUSCIPES, Oliv., Schönh.; Walton, Ann. and Mag. Nat. Hist., vol. xix. p. 449, tab. xv. fig. 10, (1847), *described.*

173. OTIORHYNCHUS EBENINUS, Schönh.; Walton, Ann. and Mag. Nat. Hist., 2nd ser. vol. i. p. 302 (1848), *described;* Murray, Cat. Scot. Col. p. 71 (1853); Hardy, Proc. Berwicksh. Nat. Club, vol. ii. no. vi. p. 281.

174. OTIORHYNCHUS SEPTENTRIONIS, Hbst.; S. Stevens, Proc. Ent. Soc. Lond., 6 Nov. 1854; Zool., p. (1854).

175. OTIORHYNCHUS? (*Trachyphlœus*) FISSIROSTRIS (Schönh. in litt.); Walton, Ann. and Mag. Nat. Hist., vol. xix. p. 452 (1847), *described;* S. Stevens, Zool. p. 749 (1844), erroneously "*fuscirostris.*"

176. PISSODES PICEÆ, Illig., Schönh.; Walton, Ann. and Mag. Nat. Hist., 2nd ser. vol. i. p. 295 (1848), *described.*

177. MAGDALIS PHLEGMATICA, Hbst.; Walton, Ann. and Mag. Nat. Hist., vol. xvi. p. 224 (1845), *described;* A. White, Proc. Ent. Soc. Lond., 5th July, 1841; R. N. Greville, Zool., p. 699 (1844); Murray, Cat. Scot. Col., p. 70 (1853).

178. NOTARIS SCIRPI, Fab., Schönh.; Walton, Ann. and Mag. Nat. Hist., 2nd ser. vol. ii. 167 (1848), *described;* S. Stevens, Proc. Ent. Soc. Lond., 6th Dec. 1841, "*Erirhinus Scirpi,*" Entom., p. 225 (1841), p. 398 (1842); T. V. Wollaston, Zool., p. 174, 179 (1843).

179. DORYTOMUS PILLUMUS (Sturm), Schönh. (*Bagoüs Beckwithii,* Kirby, MSS.); Walton, Ann. and Mag. Nat. Hist., 2nd ser. vol. vii. p. 316 (1851), *described.*

180. DORYTOMUS VALIDIROSTRIS, Schönh.; Walton, Ann. and Mag. Nat. Hist., 2nd ser. vol. vii. p. 316 (1851), *described;* S. Stevens, Entom., p. 398 (1842).

181. DORYTOMUS SALICINUS, Gyll., Schönh.; Walton, Ann. and Mag. Nat. Hist., 2nd ser. vol. vii. p. 314 (1851), *described;* T. V. Wollaston, Zool., p. 613 (1844); Murray, Cat. Scot. Col., p. 70 (1853).

182. DORYTOMUS AGNATHUS, Dahl., Schönh.; Walton, Ann. and Mag. Nat. Hist., 2nd ser. vol. vii. p. 315 (1851), *described;* Hardy and Bold, Cat. Col. Northumberland and Durham, p. 189 (1852); Murray, Cat. Scot. Col., p. 70 (1853).

183. DORYTOMUS SALICIS, Walton, Ann. and Mag. Nat. Hist., 2nd ser. vol. vii. p. 313 (1851), *described.*

184. ELLESCHUS SCANICUS, Payk., Gyll., Schönh.; Walton, Ann. and Mag. Nat. Hist., 2nd ser. vol. vii. p. 317 (1851), *described;* A. R. Hogan, Zool., p. 4198 (1854)?

185. ANTHONOMUS PUBESCENS? Payk., Gyll., Germ., Schönh.; Walton, Ann. and Mag. Nat. Hist., 2nd ser. vol. i. p. 418 (1848), *described;* A. White, Proc. Ent. Soc. Lond.,

5th July, 1841; R. N. Greville, Entom., p. 184 (1841); Murray, Cat. Scot. Col. p. 69 (1853).

186. TYCHIUS NIGRIROSTRIS, Walton; Rev. J. F. Dawson, Zool., p. 2276 (1848).

187. MICRONYX JUNGERMANNIÆ, Reich.; S. Stevens, Proc. Ent. Soc. Lond., 3rd July, 1843; Ann. and Mag. Nat. Hist., vol. xvi. p. 65 (1843); Zool., p. 1868 (1847); T. V. Wollaston, Zool., p. 1936 (1847); Rev. J. P. Bartlett, Zool., p. 3354 (1852, "*Tangermanni*" erroneously.

188. MICRONYX PYGMÆUS, Curtis; Walton, Proc. Ent. Soc. Lond., 5th July, 1841; Curtis, Ann. Nat. Hist., vol. v. p. 280 (1840), *described "Pissodes? pygmæus;"* S. Stevens, Proc. Ent. Soc. Lond., 2nd August, 1841; 4th September, 1843; Ann. and Mag. Nat. Hist., vol. xvi. p. 66 (1843); Entom. p. 225 (1841); Zool., 2502 (1849).

189. SIBINIA POTENTILLÆ, Knoch; Rev. J. F. Dawson, Zool., p. 2553 (1849).

190. ACALYPTUS CARPINI, Hbst.; Walton, Ann. and Mag. Nat. Hist., 2nd ser. vol. ix. p. 205 (1852), *described;* S. Stevens, Zool., p. 3186 (1851); Proc. Ent. Soc. Lond., 7th July, 1851; Zool., p. 3212 (1851).

191. PHYTOBIUS VELATUS, Beek; S. Stevens, Entom., p. 225 (1841), "*Pachyrhinus villatus.*"

192. PHYTOBIUS VELARIS, Gyll.; S. Stevens, Entom., p. 398 (1842), "*Pachyrhinus villaris;* T. V. Wollaston, Zool., p. 1573 (1847).

193. PHYTOBIUS WALTONI, Schönh., T. V. Wollaston, Zool., p. 850 (1845); "*Pachyrhinus,*" p. 3621 (1852), "*Phytobius velaris* of British Cabinets, but not of Gyllenhal," Zool., p. 412 (1844), "*Pachyrhinus notatus.*"

194. TRACHODES HISPIDUS, Linn., Germ., Schönh.; Walton, Ann. & Mag. Nat. Hist., 2nd ser., vol. ix. p. 204 (1852), *described;* J. Walker, Zool., p. 3102 (1851); F. Bates,

Zool., p 4437 (1854); S. Stevens, Proc. Ent. Soc. Lond, 7th Aug. 1854; Zool., p. 4450 (1854).

195. BAGOUS TEMPESTIVUS, Hbst.; S. Stevens, Entom., p. 398 (1842).

196. CEUTORHYNCHUS DEPRESSICOLLIS, Gyll., T. V. Wollaston, Zool., p. 850 (1850); "*Nedyus impressicollis*, Little;" Murray, Cat. Scot. Col, p. 63 (1853).

196*. CEUTORHYNCHUS SETOSUS, Schönh.; T. V. Wollaston, Zool., p. 412 (1844), "*Nedyus setiger*."

197. CEUTORHYNCHUS VIDUATUS, Gyll.; A. White, Proc. Ent. Soc. Lond., 5 July, 1841; R. N. Greville, Entom., p. 184 (1841); Zool., p. 699 (1844); T. V. Wollaston, Zool., p. 850 (1845); Murray, Cat. Scot. Col., p. 64 (1853).

198. CEUTORHYNCHUS AUBEI, Schönh.; Rev. J. F. Dawson, Zool., p. 2553 (1849) "*Nedyus*," Zool., p. 2276 (1848), "*Nedyus Cruæ*, Walt. MSS."

199. CEUTORHYNCHUS URTICÆ, Schönh.; T. V. Wollaston, Zool., p. 412 (1844), "*Nedyus Urticæ*, Walton."

200. CEUTORHYNCHUS RAPÆ, Gyll.; S. Stevens, Entom., p. 397 (1842), "*Nedyus syrites*," Germ."

Observation.—Mr. Stevens informs me that Mr. Walton now considers this insect to be the *Rapæ* of Gyll., not *syrites*, Germ.

201. CEUTORHYNCHUS HIRTULUS, Germ.; Rev. J. F. Dawson, Zool., p. 2553 (1849).

202. CEUTORHYNCHUS CYANIPENNIS, Illig.; R. N. Greville, Entom., p. 184 (1841), "*Nedyus*;" J. F. Stephens, Entom., p. 200 (1841), "*Nedyus*;" Murray, Cat. Scot. Col., p. 65 (1853).

203. RHINONCHUS BRUCHOIDES, Hbst.; T. V. Wollaston, Zool., p. 850 (1845), p. 1940 (1847), p. 3621 (1852), Rev. H. Clark, Zool., p. 3706 (1852).

204. TAPINOTUS SELLATUS, Fab.; T. V. Wollaston, Zool., p. 1517 (1846).

205. GYMNÆTRON PASCUORUM, Gyll.; Murray, Cat. Scot. Col., p. 62 (1853).

206. GYMNÆTRON VILLOSULUS, Schönh.; Murray, Cat. Scot. Col., p. 62 (1853).

207. GYMNÆTRON VERONICÆ, Germ.; S. Stevens, Entom., p. 225 (1841); T. V. Wollaston, Zool., p. 750 (1844), p. 850 (1845), p. 1940 (1847); Rev. J. F. Dawson, Zool., p. 2553 (1849); T. V. Wollaston, Zool., p. 3621 (1852).

208. GYMNÆTRON NIGER, Germar; T. V. Wollaston, Zool., p. 1940 (1847); H. W. Bates, Zool., p. 1998 (1848); Hardy, Proc. Berwicksh. Nat. Club, vol. ii. no. vi. p. 280, "*G. nigrum;*" Hardy and Bold, Cat. Col. Northumberland and Durham, p. 199 (1852); F. Bates, Zool., p. 2438 (1849).

Observation.—Mr. Wollaston, Zool., p. 1941 (1847), expresses considerable doubt concerning the claims of this insect to be separated specifically from *Veronicæ*.

209. GYMNÆTRON ROSTELLUM, Hbst.; Rev. J. F. Dawson, Zool., p. 2553 (1849); Murray, Cat. Scot. Col., p. 135 (1853).

210. GYMNÆTRON NOCTIS, Hbst.; A. R. Hogan, Zool., p. 4197 (1854).

211. MECINUS COLLARIS, Germ.; S. Stevens, Zool., p. 3186 (1851); Proc. Ent. Soc. Lond., 7 July, 1851; Zool., p. 3212 (1851).

212. PENTARTHRUM HUTTONI, Wollaston, Ann. and Mag. Nat. Hist., 2nd ser. vol. xiv. p. 129 (1854), *described.*

213. XYLOTERUS LINEATUS, Oliv., Gyll., Erie.; Entom. Report for 1841, p. 55 (Archiv, 1842, vol. ii. p. 243); Curtis, Ann. Nat. Hist., vol. v. p. 279 (1840), *described* "*Bostrichus Waringii*, Curtis."

214. CALLIDIUM LURIDUM, Fab.; Hindley, Entom., p. 203 (1841).

Observation.—Described by Mr. Stephens, Illustr. Mand. vol. iv. p. 248 (1831); Manual, p. 275, 2148 (1839); but considered by him to have been "erroneously indicated as British," and therefore included in this list.

215. EUMOLPUS HOBSONI, Curtis, Ann. Nat. Hist., vol. v. p. 281 (1840), *described.*

Observation.—I am unable to determine whether or not this is really the insect given by Mr. Stephens, Manual, p. 309 (1839), as a var. of *Chrysomela lamina*, and have therefore enumerated it in this list.

216. CHRYSOMELA MARGINALIS, Dufts. var.; Murray, Cat. Scot. Col., p. 91 (1853).

217. CHRYSOMELA SPARSHALLI, Curtis, Ann. Nat. Hist., p. 282 (1840), *described.*

218. HALTICA PUBESCENS, Ent. Heft.; Rev. H. Clark, Zool., p. 3706 (1852).

219. HALTICA FUSCIPES, Fab.; Murray, Cat. Scot. Col., p. 88 (1853).

220. HALTICA DISPAR, Rudd; Zool., p. 1517 (1840), *described.*

221. LONGITARSUS APICALIS, Waterh. MSS.; T. V. Wollaston, Zool., p. 889 (1845); Rev. J. F. Dawson, Zool., p. 2114 (1848); Hardy and Bold, Cat. Col. Northumberland and Durham, p. 214 (1852), *described;* Murray, Cat. Scot. Col., p. 89 (1853).

222. MACROCNEMA SPERGULÆ, Gyll.; R. N. Greville, Zool., p. 340 (1843); T. V. Wollaston, Zool., p. 477 (1844).

223. COCCINELLA LABILIS, Mulsant; J. F. Stephens, Zool., p. 1865 (1847), *described.*

224. SCYMNUS ANALIS, Fab. (*nec* Steph.); Murray, Cat. Scot. Col., p. 95 (1853).

225. ORTHOPERUS CURVIMANUS, Mots.; Rev. H. Clark, Zool., p. 3706 (1852).

226. MONOTOMA GRACILIS, Curtis, Ann. Nat. Hist., vol. v. p. 277 (1840), *described.*

227. LATRIDIUS MINUTUS, L.; A. R. Hogan, Zool., p. 4196 (1854).

IMPORTANT NEW WORKS

ON

ENTOMOLOGY.

During the past year Five Entomological Works of considerable importance have appeared. These we will notice in the order of publication.

THE ENTOMOLOGIST'S COMPANION, by H. T. STAINTON. Second Edition, pp. 146. London: John Van Voorst. Price 3*s*.

CONTAINING:—How to catch Micro-Lepidoptera—Where to catch Micro-Lepidoptera—When to catch Micro-Lepidoptera—To collect the Larvæ of Micro-Lepidoptera—Table of Appearance of British Tineina—Calendar of British Tineina appearing in the Imago state—On the Habits of Tineina larvæ—Calendar of British Tineina appearing in the Larva or Pupa state—How to rear Micro-Lepidoptera from the Larvæ—How to kill Micro-Lepidoptera—How to set Micro-Lepidoptera—Entomological Localities—Ten days at Kilmun, with a Trip to the Isle of Arran—On the Necessity of the Collector keeping a Journal—Journal of a Larva Collector for 1853.

"The present volume is more than an amplification and correction of its predecessor. It has been my aim, by the insertion of more readable matter, to render the 'Companion' more entertaining, without sacrificing any of its usefulness, and without enhancing the cost.

"One main object of this book is to induce Entomologists to observe and record their observations. We must multiply the number of observers. Every nook and corner must be ransacked by some observing Entomologist; and the more labourers in the field the sooner will the harvest be gathered in."—*Preface.*

"For those interested in the study of the smaller moths, this book will be found of great use: the ways of catching, keeping, rearing, killing and setting these minute creatures are fully detailed."—*Athenæum.*

"This edition presents several new features; firstly, some fourteen pages devoted to the Entomological localities in the neighbourhood of London, with the means of getting to them, and what to be found in them fully detailed. To the London Entomologist this will, we think, prove a welcome addition; secondly, we have an account of ten days at Kilmun, with a trip to the Island of Arran; and lastly, we have the journal of a Microlepidopterist for the year 1853, which may fairly stand as a model of such things. This volume should be found in every collector's possession; as a handbook they will find it invaluable."—*Natural History Review.*

GEODEPHAGA BRITANNICA; a Monograph of the Carnivorous Ground Beetles indigenous to the British Isles. By JOHN FREDERICK DAWSON, LL.B. Coloured Plates. London: John Van Voorst. Price 12s.

"In consequence of a suggestion made to me by several of my entomological friends and correspondents, I have been induced to undertake, and at length to publish, a specific arrangement of the carnivorous ground beetles indigenous to the British Isles, a group to which I have paid much attention. . . . . I have been unwilling to reject any reputed indigenous species which I felt I could reasonably retain; and yet, after full consideration, have been compelled to reduce their aggregate amount very considerably, either because many of them are evidently varieties of others, or because no sufficiently conclusive evidence exists to warrant their retention in the British Fauna."—*Preface.*

"From a comparison of Mr. Dawson's Tabula Specierum with the corresponding portion of Stephens's Manual, we find in the latter 449 species, while in Mr. Dawson's list there are

only 294; in other words 155 species, or about one-third of the whole, have disappeared. Perhaps we may be permitted to doubt whether still further investigation may not lead to the re-admission of some of the species rejected by Mr. Dawson; at any rate it will be interesting, and possibly useful, to collect such gleanings of information about any of them as may tend, however slightly, to bring the question of their authenticity to a final issue. The pervading spirit of Mr. Dawson's Monograph is that of determined compression. Thoroughly dissatisfied with the received arrangement, and continually complaining of the confusion into which it has been thrown, the author has set himself in good earnest to simplify as much as possible; he has applied himself to his task with most laudable patience and assiduity, and has evidently turned to good account the great advantages of which he was possessed. In conclusion, we will only express our opinion that Mr. Dawson has produced a very original and useful Monograph, and we hope that many other Entomologists may be incited to follow his example."—*Natural History Review.*

"A work that bears internal evidence of invincible assiduity and a profound knowledge of the subject. This volume is less remarkable for the amount of new matter it contains than for the mass of old and worthless matter which it sweeps away. Nothing was ever more extraordinary than the wholesale destruction of names which Mr. Dawson has achieved. Those entomologists who had reserved long gaps in their cabinets, under the fond idea that these were to be eventually filled, now find that half the names for which this extensive accommodation was prepared actually signify nothing, while a large portion of the remaining moiety is comprised of names erroneously applied. . . I think that every British Coleopterist is bound to possess himself of this valuable volume."—*Address of the President of the Entomological Society of London, January,* 1855.

INSECTA BRITANNICA. LEPIDOPTERA: TINEINA. By H. T. Stainton. With Ten Plates. London: Lovell Reeve, Henrietta Street, Covent Garden. Price 25*s*.

"The object of this volume is to furnish descriptions of all the species of Tineina (a group of Lepidoptera) at present known to inhabit Great Britain, and, at the same time, to give as much information concerning their habits and transformations as the limited space would allow. Of the ten plates, which have been carefully executed by Mr. Wing, eight illustrate the generic characters, one the various forms of the larvæ, and one the perfect insects of several of the most important genera (especially representing those which have any peculiarity in their posture when in repose)." —*Preface.*

"This volume is the third in a series of publications put forth under the immediate sanction of the President of the Entomological Society, with a view of producing ultimately a complete series of works on British Entomology. The present volume is devoted to the Tineina, one of the five groups of Micro-Lepidoptera. Of all the groups of Lepidoptera, perhaps, none are more interesting than the Tineina, and few, if any, so far from being thoroughly understood. The peculiarity of their forms in numerous instances, the gorgeousness of their colouring, the wonderful beauty of the pencilled markings on their wings, the fanciful and grotesque position in which many of them delight to stand, the variety and singularity of their transformations, all these and other characteristics render them uncommonly attractive; while, on the other hand, their minuteness, the pains taken and the expertness manifested by both larvæ and perfect insects in concealing themselves, or escaping if discovered, as well as the difficulty of obtaining uninjured specimens,

have thrown difficulties in the way of the scientific student, if not insuperable, at least extremely perplexing and tantalising.

"The ten plates must have, at least, a passing notice; they deserve more, but we must come to an end. That illustrating 'those which have any peculiarity in their posture when in repose' provoked one or two smiles as we saw the comic humility of one species, with his head in the dust, side by side with the pompous vanity of the one perched on his tail, and, a little farther on, the abject appearance of a little beauty, lying flat along, pressed down hard to the earth."—*Natural History Review.*

"It contains descriptions of 591 species, of which 272 are not given as species by any other British author . . . The copious and almost crowded illustrations by the pencil of our deeply lamented assistant secretary are worthy of attentive study."—*Address of the President of the Entomological Society of London, January*, 1855.

INSECTA MADERENSIA; being an Account of the Insects of the Islands of the Madeiran Group. By T. VERNON WOLLASTON, M.A., F.L.S. Large 4to. Pp. 634, with Thirteen Coloured Plates. London: John Van Voorst. Price £2: 2*s*.

"Mr. Wollaston having been advised by his physicians, in October, 1847, to leave England for the benefit of his health, employed a seven months' residence in Funchal in collecting such insects (and desultory information concerning them) as came beneath his notice; but without any ulterior design, than that of a mere temporary amusement, and to relieve the monotony of a winter's exile in a distant land. In November of the following year, however, another migration being recommended, Mr. Wollaston decided 'on making a virtue of necessity,' and turning his second banish-

ment to a more practical account than the first one; and consequently started with the full intention of accumulating matter for publication.

"The present volume contains descriptions of no less than 213 genera. The total number of species enumerated is 482. We think those exiled from their native land, that repair to Madeira to spend the winter months, should be extremely grateful for the pains Mr. Wollaston has been at in defining the places where such and such Coleoptera are to be found, in order to incite them to follow the captivating pursuit of Entomology.

"The warmest thanks of Entomologists are due to Mr. Wollaston for the publication of this work; they will find it to contain everything that a scholar, and an indefatigable lover of nature, could bring to bear upon their favourite science, and we think Mr. Wollaston entitled to take a high rank among those engaged in such pursuits." — *Natural History Review.*

"This work is not the result of a mere *dilettante* sweeping of the hedges with a muslin net; but a substantial contribution to the science of Entomology, that will live as long as there are men who cultivate the knowledge of this vast department of created beings. This volume, large as it is, does not embrace all insects, but only those popularly called Beetles. The Entomologist will thank Mr. Wollaston for concentrating his attention on one group, thus rendering a substantial contribution to science possible.

"Such an account of the Coleoptera of any district would have been valuable, but all that relates to Madeira has an especial interest. The problem of the geological history of these islands, lying midway between the Old and New Worlds, can only be solved by a complete knowledge of the forms of its present inhabitants, and their relation to those of other parts of the world . . . . . .

"We must not close our notice of this volume, without stating that it is the result of three several visits to the Madeira islands—two winters and one summer having been spent in collecting materials. During the summer expedition, the author sojourned for some time in the mountains, taking with him his tent. He speaks with enthusiasm of the beauty of the mountain scenery of Madeira, and of the deliciousness of a tent life in these commanding positions. As a contrast to the delight he experienced in his scientific researches, he refers to the *ennui* of the majority of those who seek Funchal for the benefit of their health, in the absence of any occupation that would withdraw their minds from the maladies under which they suffer. To all such Mr. Wollaston's book will be a treasure as a guide to the localities where they may meet with interesting objects, the search after which seems to have restored his own health, and the description of which here given will gain for him a reputation as an accurate Entomologist."—*Athenæum.*

"But the most important and valuable work I have to notice, and the one which, as a work of science, will confer most honour on this country, is the 'Insecta Maderensia' of Mr. Wollaston. This work is distinguished throughout by persevering industry, profound knowledge, and philosophical spirit. Nothing can exceed the industry with which the author has pursued his object, a fact that will be sufficiently evident when I state that he has described 213 genera, and 482 species of Madeiran Coleoptera, out of which 41 of the genera, and 270 of the species, are now characterized for the first time, and are therefore absolutely new to science. With regard to the solid Entomological knowledge possessed, and in every page made manifest without display, there can be but one opinion, for not a single species or genus is mentioned unaccompanied by the evidence of a perfect knowledge of its antecedent history: this, I am

aware, is very high praise, but it is praise which no one can say is unmerited. The philosophical spirit is manifested equally in the masterly characters given of every genus and species, and in the explanatory remarks which invariably follow each description; and I must not omit to add, that these descriptions and remarks are invaluable to the British Coleopterist, because a large proportion of the genera described, and cited for comparison, are familiar to us as indigenous to Britain."—*Address of the President of the Entomological Society of London, January*, 1855.

Mr. Wollaston, who has again started for Madeira, with the intention of prosecuting his Entomological studies in those islands, around which his book has shed a halo of Entomological glory, when almost on the eve of starting furnished us, at our request, with the "Instructions in Collecting and Preserving Coleoptera," given at p. 101 of this Annual; and we trust that many of the readers of those "Instructions" will feel a desire to make further acquaintance with the Author, and we are satisfied that all who, acting upon that feeling, once obtain a sight of the "Insecta Maderensia," will be anxious to possess it. It is unfortunate, in one respect, that the work is *so well got up*, for though published at an unremunerative price, it is still far too expensive for the pockets of ordinary Entomologists. Judging from the appearance of the book, with its large quarto pages of goodly paper and broad margins, with clear type, we should say it was specially designed for the same class of readers who so greedily devoured "Childe Harold," when it appeared in a similar form; but are there, among these higher classes, any readers of Entomological works? That is certainly the problem which Mr. Wollaston's book will solve; it will *not* reach those who now can appreciate its value: will it, by its attractive exterior, engage the attention of others who may by it be won to a love of Entomology?

Geology has long been a fashionable science, and the President of the British Association for the ensuing meeting (the Duke of Argyll) is known as a good geologist; why should not Entomology be also represented in the House of Lords and in the Cabinet?—*Editor of the Entomologist's Annual.*

THE BUTTERFLIES of GREAT BRITAIN, with their TRANSFORMATIONS. Delineated and described by J. O. Westwood, Esq., F.L.S., with Nineteen Coloured Plates. London: W. S. Orr & Co. Price 15*s.*

This volume, according to the preface, *may* be considered as a re-issue of "British Butterflies and their Transformations," a work which, generally known as "Humphreys and Westwood," has never been regarded with favour by the Entomologists of the present day; but the object being 'to re-issue it at a price which would place it within the reach of every student,' the size as well as the bulk of the work has been reduced, and Mr. Westwood has himself drawn a set of fresh plates, and only those species are introduced which are enumerated as British in Stephens's Museum Catalogue: it may therefore be readily understood that it is a *vast improvement* on the work of which it professes to be a re-issue, and will no doubt be found of very great use by incipient collectors. It is very interesting to notice the extent of our ignorance on many parts of the Natural History of our few species of Diurnal Lepidoptera, some idea of which may be formed from the following queries, to which we should be very glad to receive answers.

1. *Papilio Machaon.* Are there one or two broods in the year?
2. *Colias Hyale.* Is this double-brooded on the Continent?

3. *Melitæa Sclene* and *Euphrosyne*. It would be very desirable to ascertain, *with certainty*, whether either of these species occur in the autumn.
4. *Argynnis Lathonia*. Continental Entomologists can surely at once decide whether there are one or two broods of this in the year.
5. *Vanessa C. Album*. Has not occurred near London for many years: where is it now met with?
6. *Hipparchia Semele*. "It forms a cocoon in the earth, according to M. Marloy:" having seen the naked suspended pupa, as figured by Mr. Westwood, we suppose M. Marloy must have been *quizzing* him.
7. *Hipparchia Tithonus*. *Does* the larva of this species feed on the Hieracium Pilosella?
8. *Oreina Ligea*. If this be really a British species, why does not some enterprising Scotchman rediscover it?
9. *Thecla Quercus*. A writer in "Loudon's Magazine of Natural History" states "that the caterpillar of this species goes underground to effect its transformations:" surely there is some error of observation here; can any one confirm this statement?
10. *Thecla Rubi*. Is there a second brood of this species in August?
11. *Polyommatus Œgon*. Is not this common on moors in the North of England?
12. *Cyclopides Paniscus*. Is there not a brood of this in July or August?
13. *Pamphila Comma*. Is there not a brood of this in May? And the same remark may apply to *P. Linea*, and probably also to *P. Actæon*; but who ever makes excursions into Dorsetshire so early in the year?

Another point on which the deficiency of our printed information respecting British Butterflies is very striking, is their geographical distribution. All the old localities are carefully brought forward here, though many of them have been long deserted by the respective species; and, on the other hand, localities where species not of *general occurrence* are still continuously taken, are unnoticed and unrecorded. Would that each Entomologist would prepare a list of the Butterflies occurring in his own locality, noting their times of appearance, and any peculiarity of habit, and, where possible, the food-plant and habit of the larva! At small trouble to each individual, an idea of the distribution of each species might be satisfactorily obtained, and increased stimulus given to the study of the British Butterflies.—*Editor of The Entomologist's Annual.*

HINTS to STUDENTS of ENTOMOLOGY, or of other Branches of Natural History (extracted from the Papers relating to the Re-organization of the Civil Service).

"Without steady application a long course of study cannot be mastered, and nothing is more certain than that habitual diligence brings other virtues in its train; for instance, temperance and self-control, to say nothing of punctuality and accuracy—yet even these latter have a real connection with truth and honesty."—*Rev. Charles Graves, DD.*

"Any one who looks around him will, I think, see that the public mind is now educating itself, rather according to a scientific than a literary type, and that the great element in the social progress which is going on around us is not literature but science."

"I have called to mind the names of six men in London who, by their labours for the advancement of science, have, it appears to me, exercised a greater influence on the popular

scientific mind, and through it, on the material welfare of the country, than any other six Englishmen now living whom I can remember. Each of these men has devoted himself specially, from early life, to the pursuit of *one* department of knowledge; and yet, through the means of that *one study*, his mind (educated by that *one phase of it*) has received a *large* and *liberal* development as to other forms of knowledge."—*Rev. Canon Mosely.*

"I should certainly add English history, Euclid and one of the natural sciences to the subjects which he mentions. The latter is particularly important, as calling out the faculty of observation, which is scarcely done either by a training in literature or in abstract science."—*Rev. G. E. L. Cotton.*

"A man may not be a much better postman for being able to draw, or being acquainted with natural history; but he who in that rank possesses these acquirements has given evidence of qualities which it is important for the general cultivation of the mass that the state should take every fair opportunity of stamping with its approbation."—*John Stuart Mill.*

"He who has mastered any one branch of liberal knowledge must have toiled through details as uninteresting, *per se*, as the smallest of those in an office, and must have learnt how to measure the worth of parts by that of the whole which each contributes to form."—*R. R. W. Lingen.*

"As to the assertion that vanity and conceit increase with knowledge and industry, one would only have expected it to be made by persons either wilfully blind to the real effects of a good education, or who have had no experience of it themselves."—*Rev. G. E. L. Cotton.*